Vol. 992 Number 4

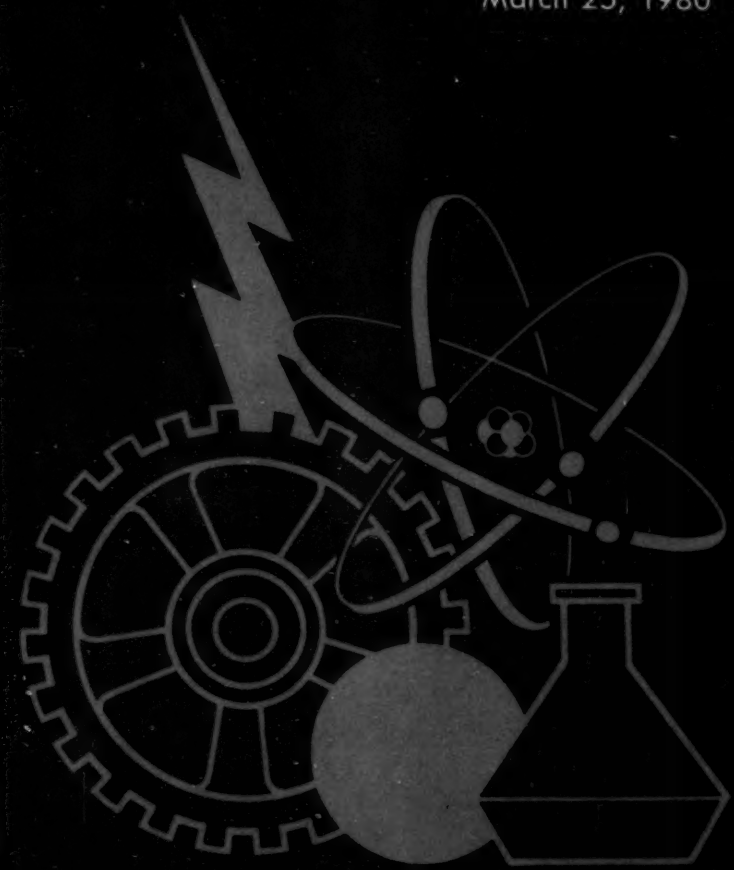
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 25, 1980



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 25, 1980 Volume 992 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Department of the Treasury
United States Customs Service

(T.D. 80-70)

NOTICE OF RECORDATION OF TRADE NAME

COLT COMMUNICATIONS

On January 10, 1979, there was published in the FEDERAL REGISTER (44 FR 2217) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name COLT COMMUNICATIONS, INC. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice.

The name "COLT COMMUNICATIONS" is hereby recorded as the trade name of Colt Communications, a corporation organized under the laws of the State of Illinois, located at 5424 West Touhy Avenue, Skokie, Illinois 60077, when applied to citizen band two way radio transceivers manufactured in Japan and Korea. No foreign firm is authorized to use the trade name sought to be recorded.

HARVEY B. FOX,
Dated: Feb. 13, 1980. *Acting Director, Office of Regulations and Rulings.*

Department of the Treasury
United States Customs Service

(TMK-2-RRUEE)

NOTICE OF APPLICATION FOR RECORDATION OF TRADE NAME

FLORASYNTH, INC.

Application has been filed pursuant to section 133.12 Customs Regulations (19 CFR 133.12), for recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124) of the trade name FLORASYNTH, INC. used by Florasynth, Inc., a corporation organized under the laws of the State of New York, located at 410 East 62nd Street, New York, New York 10021.

The applicant states that the trade name is applied to essences and aromatic ingredients used as bases for cosmetics, toilet preparations, perfumes and colognes, and as flavor in foods, beverages and tobacco products; essential oils, used as an odorant to mask disinfectants, insecticides, and similar products; extracts, flavors, oils and emulsions for use in making soft drink syrups and bases; non-alcoholic preparation for producing a foam in soft drinks and a flavoring agent used in the preparation of root beer; orange compound adapted to produce a cloud in nonalcoholic, maltless soft drink beverages and having flavoring ingredients; natural and synthetic organic flavors, extracts, oils, and blenders for alcoholic beverages; imitation vanilla bean flavor; grapefruit juice powder, lemon juice powder, lime juice powder, orange juice powder, and brown sugar powdered flavor; citrus oils for food purposes; onion powder and garlic powder; and coffee, manufactured in Brazil, Canada, England, France, Japan, Mexico and the United States. Various foreign subsidiaries are authorized to use the trade name. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

Notice of the action taken on the application for recordation of the trade name will be published in the FEDERAL REGISTER.

DONALD W. LEWIS,
Dated: Feb. 1, 1980. *Director, Office of Regulations and Rulings.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,673,294, Re. S.N. 115,541, Filed Jan. 25, 1980, Cl. 264/75, METHOD FOR THE MANUFACTURE OF MARBLEIZED SOAP BARS, Raymond G. Matthaei, Owner of Record: *Lever Brothers Co., New York, N.Y.,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 147

3,723,474, Re. S.N. 106,619, Filed Dec. 26, 1979, Cl. 260/347.2, META-THIOCARBAMYL PHENYLENE AMIDES AND UREAS AND THEIR UTILITY AS HERBICIDES, Eugene G. Teach, et al., Owner of Record: *Stauffer Chemical Company, New York, N.Y.,* Attorney or Agent: Daniel C. Block, et al., Ex. Gp.: 121

3,776,991, Re. S.N. 111,514, Filed Jan. 11, 1980, Cl. 264/530, INJECTION BLOW MOLDING METHOD, Paul Marcus, Owner of Record: *Inventor,* Attorney or Agent: David S. Kane, et al., Ex. Gp.: 147

3,980,091, Re. S.N. 108,899, Filed Dec. 31, 1979, Cl. 132/7, QUATERNARY AMMONIUM COMPOUNDS IN PRETREATMENT OF HAIR BEFORE SHAMPOOING WITH AN ANIONIC SHAMPOO, George F. Dasher, et al., Owner of Record: *Alberto-Culver Company, Melrose Park, Ill.,* Attorney or Agent: Sidney Wallenstein, et al., Ex. Gp.: 333

4,034,131, Re. S.N. 094,992, Filed Nov. 16, 1979, Cl. 428/35, CONTAINER WITH IMPROVED HEAT SHRUNK CELLULAR SLEEVE, Roger R. Rhoads, Owner of Record: *Owens-Illinois, Inc., Toledo, Ohio,* Attorney or Agent: H. G. Bruss, et al., Ex. Gp.: 164

4,063,048, Re. S.N. 102,377, Filed Dec. 11, 1979, Cl. 179/107 R, IMPLANTABLE ELECTRONIC HEARING AID, Adam M. Kissiah, Jr., Owner of Record: *Inventor,* Attorney or Agent: Raymond F. Kramer, Ex. Gp.: 235

4,064,254, Re. S.N. 098,007, Filed Nov. 28, 1979, Cl. 424/267, SUBSTITUTED PIPERIDINES THERAPEUTIC PROCESS AND COMPOSITIONS, Stanley J. Dykstra, et al., Owner of Record: *Mead Johnson & Company, Evansville, Ind.,* Attorney or Agent: Robert E. Carnahan, et al, Ex. Gp.: 125

4,065,162, Re. S.N. 106,498, Filed Dec. 26, 1979, Cl. 292/340, LOCK STRIKE CONSTRUCTION, Ernest L. Schlage, Owner of Record: *Schlage Lock Company, San Francisco, Calif.,* Attorney or Agent: David W. Tibbott, et al., Ex. Gp.: 355

4,067,683, Re. S.N. 110,666, Filed Jan. 1, 1980, Cl. 431/11, METHOD AND APPARATUS FOR CONTROLLING FLUENCY OF HIGH VISCOSITY HYDROCARBON FLUIDS, William J. Klaila, Owner of Record: *by mesne assignments to Electromagnetic Energy Corp., New York, N.Y.,* Attorney or Agent: Roland T. Bryan, et al., Ex. Gp.: 345

4,069,420, Re. S.N. 112,599, Filed Jan. 16, 1980, Cl. 250/341, OPTIONAL GAS ANALYZER, Thaddeus C. Ross, Owner of Record: *Anarad Inc., Santa Barbara, Calif.,* Attorney or Agent: William R. Evans, et al., Ex. Gp.: 256

4,088,614, Re. S.N. 110,501, Filed Jan. 8, 1980, Cl. 521/163, FLAME RESISTANT POLYURETHANE FOAM AND PROCESS FOR PRODUCING THE SAME, Shigeo Mori, et al., Owner of Record: *Dai-Ichi Kogyo Seiyaku Co., Kyoto, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 144

4,097,175, Re. S.N. 109,260, Filed Jan. 3, 1980, Cl. 408/23, MACHINE FOR DRILLING HOLES IN RIGHT-ANGULAR WORK SURFACES, Yoshihiro Tsukiji, Owner of Record: *Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 324

4,118,844, Re. S.N. 109,261, Filed Jan. 3, 1980, Cl. 29/27 C, MACHINE TOOL, Hiroshi Matsuzaki, et al., Owner of Record: *Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 324

4,159,022, Re. S.N. 108,937, Filed Dec. 31, 1979, Cl. 128/214.4, CATHETER DELIVERY SYSTEM AND METHOD, Paul H. Pevsner, Owner of Record: *Inventor,* Attorney or Agent: B. Franklin Griffin, Jr., Ex. Gp.: 335

PATENT NOTICES

Certificates of Correction for the Week of Mar. 25, 1980

4,001,578	4,152,339	4,175,206	4,180,090
4,008,201	4,154,749	4,175,525	4,180,174
4,038,889	4,157,622	4,175,543	4,180,343
4,044,017	4,160,311	4,175,667	4,180,438
4,069,218	4,161,125	4,175,705	4,180,665
4,071,481	4,162,995	4,175,892	4,180,693
4,071,539	4,163,753	4,176,009	4,180,729
4,075,679	4,163,836	4,176,032	4,180,735
4,078,025	4,165,585	4,176,123	4,180,830
4,083,177	4,165,599	4,176,142	4,180,951
4,086,924	4,165,967	4,176,250	4,181,011
4,095,122	4,166,651	4,176,593	4,181,061
4,103,169	4,166,734	4,176,602	4,181,120
4,106,683	4,166,748	4,176,644	4,181,177
4,107,222	4,166,803	4,177,000	4,181,260
4,108,837	4,166,864	4,177,103	4,181,321
4,112,671	4,167,025	4,177,151	4,181,450
4,114,027	4,167,465	4,177,245	4,181,510
4,115,382	4,168,984	4,177,272	4,181,563
4,116,398	4,169,604	4,177,278	4,181,797
4,118,506	4,170,160	4,177,300	4,181,860
4,119,431	4,171,089	4,177,356	4,181,935
4,119,531	4,171,853	4,177,731	4,182,026
4,119,541	4,172,493	4,177,900	4,182,094
4,120,272	4,173,163	4,177,957	4,182,146
4,120,368	4,173,436	4,177,970	4,182,147
4,122,890	4,173,485	4,178,158	4,182,264
4,124,756	4,173,532	4,178,161	4,182,360
4,133,730	4,173,562	4,178,172	4,182,422
4,134,110	4,173,599	4,178,438	4,182,423
4,136,080	4,173,640	4,178,454	4,182,534
4,138,169	4,174,038	4,178,610	4,182,566
4,141,531	4,174,112	4,178,811	4,182,655
4,147,455	4,174,310	4,178,857	4,182,735
4,148,840	4,174,622	4,178,991	4,182,798
4,148,996	4,174,883	4,179,344	4,183,076
4,149,042	4,174,894	4,179,372	4,184,188
4,149,845	4,174,925	4,179,704	4,184,305
4,150,198	4,175,195	4,179,737	4,184,728
4,151,353	4,175,196	4,179,875	

Patent Applications Available for Licensing or Sale

As a service to owners of patent applications who desire to give public notice that their patent applications are available for licensing or sale, the Patent and Trademark Office will publish notices in the OFFICIAL GAZETTE of Patent Applications Available for Licensing or Sale.

Except as noted below, this service is made available on the terms and conditions, including the fee, specified in the Commissioner's notice of October 29, 1954, 688 O.G. 627, which instituted the publication of notices of Patents Available for Licensing or Sale.*

*The text of the prior notice is as follows:

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As a service to owners of patents who desired to give public notice that their patents are available for licensing or sale, the Patent Office will publish such notices in the OFFICIAL GAZETTE.

The notices will be printed under an appropriate heading from time to time as a sufficient number accumulate to justify publication. Notices will be limited to the patent number, title of the patent, and name and address of the owner.

Since printing will be based upon information as furnished, the Patent Office cannot assume any responsibility for the contents of the notices.

Patent owners desiring to avail themselves of this service should include in their letters requesting publication the information specified in the second preceding paragraph. The charge for this service will be $3.00 for each patent concerning which notice is published.

Notices submitted for publication may refer to each application by some identifying number other than the application Serial No., and should include a brief descriptive title of the invention. The descriptive title need not be the title of the application.

Notices will be printed under the heading "Patent Applications Available for Licensing or Sale." The following statement will appear immediately below the heading as a preface to the notices:

The applications listed below will not be open to inspection by the public, nor will any information concerning the same be given by the Patent and Trademark Office, except upon written authority from the owner in accordance with 37 CFR § 1.14.

Owners submitting notices for publication are requested to submit an accompanying letter which must be signed by the owner and contain the following authorization:

[*Name of the owner*], the owner of the patent application(s) identified in the attached notice hereby authorizes the Commissioner of Patents and Trademarks to publish the notice in the OFFICIAL GAZETTE and waives [*its, his or her*] right to confidentiality under 35 USC 122 to the extent, and only to the extent necessary to effect such publication.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Date: Mar. 3, 1980.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-050,895. Method of Preparing Citrus Fruit Sections With Fresh Flavor and Appearance. Filed June 21, 1979.

Patent application 6-055,117. Protection of Insect Pheromones From Degradation by Ultraviolet Radiation. Filed July 5, 1979.

Patent application 6-061,322. Ternary Salts of Tris(Aminomethyl) Phosphines and Their Oxides. Filed July 26, 1979.

Patent application 6-062,824. Purification of Sucrose Esters of Fatty Acids by a Method of Ultrafiltration. Filed Aug. 1, 1979.

Patent 3,577,711. Apparatus for Removing Entrained Particles From Gases. Filed June 2, 1969. Patented May 4, 1971.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents, Room A2-3018 Washington, D.C. 20545

Patent application 854,444. Single Transmission Line Interrogated Multiple Channel Data Acquisition System. Filed Nov. 23, 1977.

Patent 4,138,320. Fluidic Self-Actuating Control Assembly. Filed June 29, 1978. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,138,622. High Temperature Electronic Gain Device. Filed Aug. 4, 1977. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,139,724. Ceramic End Seal Design for High Temperature High Voltage Nuclear Instrumentation Cables. Filed Oct. 13, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,140,176. Protective Tubes for Sodium Heated Water Tubes. Filed Mar. 26, 1978. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,140,228. Dry Piston Coal Feeder. Filed Dec. 1, 1977. Patented Feb. 20, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent application 6-023,817. An Ultrasonic Focusing System for the Warming of Cardiac Tissue. Filed Mar. 26, 1979.

Patent application 6-024,645. Method of Age Testing Rubber Based Propellants. Filed Mar. 28, 1979.

Patent application 6-025,819. Method of Preparing Prostaglandin B1 Derivatives. Filed Apr. 2, 1979.

Patent application 6-025,822. G-Protection System. Filed Apr. 2, 1979.

Patent application 6-042,173. Acoustic Array Frequency Response Tester. Filed May 24, 1979.

Patent application 6-054,077. Optical Resonator Single-Mode Fiber Hydrophone. Filed July 2, 1979.

Patent application 6-059,405. Pulsed Ring Laser Fiber Gyro. Filed July 20, 1979.

Patent application 6-059,921. Holographic Terrain Surface Display System. Filed July 20, 1979.

Patent application 6-059,922. Holographic Storage of Terrain Data. Filed July 20, 1979.

Patent application 6-061,737. Far Field Target Designators. Filed July 30, 1979.

Patent application 6-061,975. Current Stabilized Underwater Platform. Filed July 30, 1979.

Patent application 6-062,668. Wide-Band Stationary Imaging Pyroelectric Camera. Filed Aug. 1, 1979.

Patent application 6-062,834. Multichannel RF Signal Generator. Filed Aug. 1, 1979.

Patent application 6-068,024. Digital Sidelobe Weighting Technique. Filed Aug. 20, 1979.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP-4, Washington, D.C. 20546

Patent application 6-054,538. High Speed, Glitch-Free Digital to Analog Converter. Filed July 3, 1979.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-9-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-2-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-30-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-31-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	8-21-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-20-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking: Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-5-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-15-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-18-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	10-2-78

Expiration of patents: The patents within the range of numbers indicated below expire during February 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,076,195 to 3,079,605, inclusive
Plant Patents ..... Numbers 2,224 to 2,231, inclusive

REISSUES

MARCH 25, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

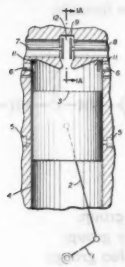
Re. 30,236
CLEAN SPARK IGNITION INTERNAL COMBUSTION ENGINE

Hui-Tzeng Ting, Apartment 306, 290 Potter Pl., Weehawken, N.J. 07087

Original No. 4,036,187, dated Jul. 19, 1977, Ser. No. 667,409, Mar. 16, 1976. Continuation-in-part of Ser. No. 376,304, Jul. 5, 1973, abandoned. Application for reissue May 11, 1978, Ser. No. 904,753

Int. Cl.[2] F02B *19/10*

U.S. Cl. 123—32 SP **18 Claims**



1. In a four-stroke spark ignition engine having fuel injectors in the cylinder wall and a combustion chamber in the cylinder-head, the stratification of air-fuel mixture is obtained by the combined employment and unique arrangement of such devices as said combustion chamber which is divided into two separate chambers, the first chamber being bounded by the piston top at or near top dead center, the lower part of the cylinder-head, and a throat opening leading to the second chamber which is located on top of said first chamber; the inlet and exhaust valves which are located in said second chamber; the fuel injector or injectors which are located at or near the bottom dead center, and create atomized fuel droplets covering the vicinity of the piston top when injection takes place at the bottom dead center; and the spark plug or plugs which are located at or near the bottom of said first chamber, such that said stratification of air-fuel mixture is obtained with the rich mixture at or near the piston top during the end of intake stroke, and said stratification is maintained throughout the ensuing compression stroke due to the fact that the time interval of said compression stroke is extremely short as compared with the time required by natural diffusion or turbulence to undo said stratification such that at the instant of ignition a lean mixture is trapped in said second chamber, and a rich mixture is trapped in said first chamber where said spark plug or plugs give ignition to said rich mixture first, and the ignited mixture will reach more complete combustion later during the expansion stroke by mixing with the lean mixture released from said second chamber.

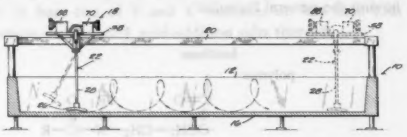
Re. 30,237
WING TYPE AGITATOR

Billy L. Born, Rockford, Ill., assignor to Stoelting Brothers Company, Kiel, Wis.

Original No. 3,856,273, dated Dec. 24, 1974, Ser. No. 372,963, Jun. 25, 1973. Application for reissue Jun. 12, 1978, Ser. No. 914,990

Int. Cl.[2] B01F *13/00*

U.S. Cl. 366—261 **13 Claims**



1. Apparatus of the type described comprising, in combination,

a vat having a bottom wall, spaced vertical side walls and an open top,

a carriage,

means supporting said carriage for horizontal movement relative to said vat generally parallel to said side walls,

a stirring blade assembly extending through said open top into said vat, said stirring blade assembly including a blade member,

means connecting said blade assembly to said carriage for horizontal movement therewith and for oscillating movement in a vertical plane relative to said carriage and said vat,

said means connecting said blade assembly to said carriage including

a rotatable crank arm connected to and rotatably driven by said drive means for said blade assembly,

an elongated support arm connected to said blade member,

means pivotally connecting said support arm to said crank arm,

and guide means connected to said support arm and said carriage and movable with said carriage, said guide means supported for pivotal movement about a horizontal axis while permitting sliding movement of said support arm relative thereto so that as said support arm is raised and lowered by said crank arm said support arm can also pivot in a vertical plane generally about the pivot axis of said guide means and oscillate in a horizontal direction,

said guide means including

an elongated rod,

means connecting said elongated rod for swinging movement about said horizontal axis,

and sleeve means connected to said support arm and surrounding said elongated rod for sliding movement thereon, said sleeve means and said support arm oscillating vertically on said elongated rod as said crank arm is rotated with said elongated rod also swinging about said horizontal axis,

and drive means for moving said carriage horizontally relative to said vat and for oscillating said blade assembly vertically so that said carriage and said blade assembly can be moved horizontally through a process medium in said vat with said blade assembly also moving vertically.

Re. 30,238
ADDITIVES TO IMPROVE THE FLOW OF HEAVY FUELS AND CRUDE OILS

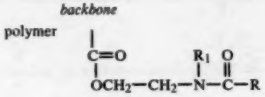
Edward H. Specht, Huntingdon Valley, and James H. O'Mara, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Original No. 4,000,986, dated Jan. 4, 1977, Ser. No. 541,176, Jan. 15, 1975. Application for reissue Sep. 25, 1978, Ser. No. 945,940

Int. Cl.[2] **C10L** *1/22*

U.S. Cl. 44—62 **8 Claims**

1. An improved hydrocarbon oil having a lower pour point and improved flow characteristics comprising (a) a major amount of the oil and (b) a minor amount in the range of about 0.005% to about 1.0% of a composition comprising an N-acylaminoethyl ester of a carboxylic acid-containing polymer having the general formula:



where R is an alkyl or alkene group having about 11 to 29 carbon atoms, [and]0 where R_1 is H or an alkyl group having 1 to 4 carbon atoms, *and where the polymer backbone is derived from an olefin substituted or unsubstituted or from a copolymer of an olefin substituted or unsubstituted and at least one of an acid, an acid anhydride, and an ester.*

Re. 30,239
CELL PROLIFERATION AND TISSUE INVASION INHIBITOR

Klaus E. Kuettner, 426-B W. Webster, Chicago, Ill. 60614; Reuben Eisenstein, 6708 N. Keating, Lincolnwood, Ill. 60646, and Nino Sorgente, 1832 Edgecliffe Dr., Los Angeles, Calif. 90026

Original No. 4,042,457, dated Aug. 16, 1977, Ser. No. 630,275, Nov. 10, 1975. Application for reissue Jun. 5, 1978, Ser. No. 912,861

Int. Cl.[2] **A61K** *35/32*

U.S. Cl. 424—95 **10 Claims**

1. The method of preparing a composition of matter having activity as an inhibitor of cell proliferation *and tissue invasion* comprising the steps of providing connective tissue having a high content of collagen or proteoglycans in condition for extraction, extracting said inhibitor from said tissue with an aqueous extraction medium which includes a solute which does not irreversibly denature the proteinaceous matter to be extracted, separating the resultant aqueous extract from the tissue, recovering from the aqueous extract substances having a molecular weight below about 50,000, treating the fraction of aqueous extract having a molecular weight below about 50,000 to remove salts therefrom, and dehydrating the resultant material.

Re. 30,240
ARTHROPODICIDAL AND NEMATOCIDAL PHOSPHORAMIDATES

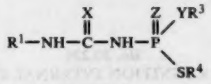
Harold E. Aller, Morristown; Edward E. Kilbourn, Chalfont; Ernest D. Weiler, Ambler, and William D. Weir, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Original No. 4,087,521, dated May 2, 1978, Ser. No. 662,743, Mar. 1, 1976. Application for reissue Jan. 8, 1979, Ser. No. 1,800

Int. Cl.[2] **A01N** *9/36;* **C07F** *9/24*

U.S. Cl. 424—211 **10 Claims**

1. A method of controlling pests which comprises applying directly to the pests or to the loci to be freed of or protected from attack by such pests, a pesticidally effective amount of a compound of the formula



wherein

R^1 is a (C_6–C_{10}) aryl group, optionally substituted with up to five (C_1–C_4) alkyl groups, (C_1–C_4) alkoxyl groups, (C_1–C_4) alkylthio groups; (C_1–C_4) alkylsulfonyl groups, (C_1–C_4) hydroxyalkyl groups, (C_1–C_4) haloalkyl groups, cyano groups, nitro groups, hydroxyl groups, or halogen atoms;

R^3 is a (C_1–C_6) alkyl group;

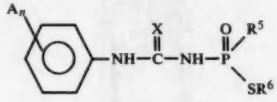
R^4 is a (C_3–C_4) alkyl group;

X is [an oxygen or] *a* sulfur atom;

Y is an oxygen or sulfur atom; and

Z is an oxygen or sulfur atom and the agronomically acceptable metal sales and metal salt complexes thereof.

2. A compound of the formula:



wherein

A is independently

(a) a (C_1–C_4) alkyl group;

(b) a (C_1–C_4) alkoxy group;

(c) a (C_1–C_4) alkylthio group;

(d) a trihalomethyl group; or

(e) a halogen atom;

R^5 is a (C_1–C_4) alkylthio group or a (C_1–C_4) alkoxy group;

R^6 is a (C_3–C_4) alkyl group;

X is [an oxygen or] *a* sulfur atom; and

n is an integer from 0 to 3 and the agronomically acceptable metal salts and metal salt complexes thereof.

Re. 30,241
ESTERS OF 3-(HYDROXY OR HYDROXYMETHYL)-4-HYDROXYPHENYL AMINOMETHYL KETONES

Hiroaki Minatoya, East Greenbush, N.Y.; Benjamin F. Tullar, Laurel Park, N.C., and Walter D. Conway, Amherst, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Original No. 3,904,671, dated Sep. 9, 1975, Ser. No. 123,834, Mar. 12, 1971. Continuation-in-part of Ser. No. 812,370, Apr. 1, 1969, abandoned. Application for reissue Jun. 20, 1977, Ser. No. 808,280

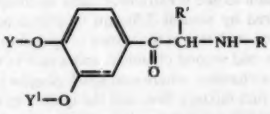
Claims priority, application Canada, Mar. 16, 1970, 077574

Int. Cl.[2] **C07C** *93/20*

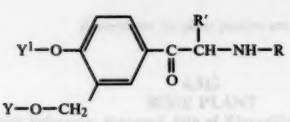
U.S. Cl. 560—73 **26 Claims**

1. A compound of the group consisting of: 3-(Y^1-O-)-4-(Y-O-)phenyl (R-NH-)(R')methyl ketones having the formula

Formula III



and 3-(Y-O-CH_2-)-4-(Y^1-O-)phenyl (R-NH-) (R')methyl ketones having the formula



Formula IV

wherein

R, in Formula III, is tert-butyl or cycloalkyl having 3–6 carbon atoms; and in Formula IV is hydrogen, alkyl having 1–4 carbon atoms, or cycloalkyl having 3–6 carbon atoms; and

wherein, in each formula:

[R is hydrogen, alkyl having 1–4 carbon atoms, or cycloalkyl having 3–6 carbon atoms;]

R′ is hydrogen or alkyl having 1–3 carbon atoms;

Y′ is hydrogen or an acyl member which is alkanoyl having 1–22 carbon atoms, cycloalkyl-C_nH_{2n}—CO— having a total of 4–10 carbon atoms of which 3–7 are ring carbon atoms in cycloalkyl and wherein n is zero, one, or two, 1- or 2-adamantanecarbonyl, phenoxyacetyl, naphthalenecarbonyl, or Z—C_nH_{2n}—CO— wherein n is zero, one or two and Z is phenyl or phenyl substituted by 1–3 members of the group consisting of alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, halo, or trifluoromethyl;

Y is one of the acyl members defined by Y^1, at least one of Y and Y^1 being Z—C_nH_{2n}—CO—; and

[wherein in Formula III at least one of Y and Y^1 contains no less than four carbon atoms when R is tert-butyl or cycloalkyl and no less than seven carbon atoms when R is hydrogen or alkyl other than tert-butyl; and in Formula IV at least one of Y and Y^1 contains no less than four carbon atoms; and] acid-addition salts thereof.

PLANT PATENTS

GRANTED MARCH 25, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,513

ROSE PLANT

Ernest Schwartz, deceased, late of Kingsville, Md. (by Hazel E. Schwartz, executrix), assignor to F. Harmon Saville, Nor'East Miniature Roses, Rowley, Mass.

Filed Oct. 27, 1978, Ser. No. 955,379

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by long tapering buds opening into rich white hybrid tea-like, high centered, blooms borne primarily singly to a stem maintaining its color well upon aging.

4,514

PLANT OF THE ARACEAE FAMILY

Gilbert R. Longoria, P.O. Box 146, Mission, Tex. 78472

Filed Jan. 22, 1979, Ser. No. 5,147

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct plant variety of the Araceae family substantially as shown and described herein.

PATENTS

GRANTED MAR. 25, 1980

ERRATA

For CLASS	See PATENT NO.
433–197	4,194,288
433–101	4,194,289
433–141	4,194,290
433–075	4,194,291
368–082	4,194,351
368–239	4,194,352
368–038	4,194,353
368–276	4,194,354
368–282	4,194,355
368–011	4,194,356
209–363	4,194,622
241–182	4,194,710
296–169	4,194,785
430–357	4,194,911
430–322	4,194,912
548–209	4,195,023
428–469	4,195,124
178–022	4,195,196
270–084	4,195,204
370–084	4,195,204
370–010	4,195,205
370–014	4,195,206
455–609	4,195,221
318–561	4,195,250
455–067	4,195,262
455–343	4,195,263
179–100.1 G	4,195,312
179–100.1 G	4,195,313
455–185	4,195,314

PATENTS

GRANTED MAR. 25, 1980

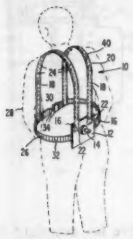
TERRATA

PATENTS

GRANTED MARCH 25, 1980

GENERAL AND MECHANICAL

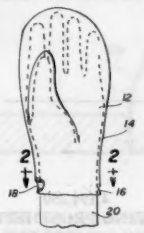
4,194,247
WEARABLE VENTILATION SYSTEM
Clarence Melander, Newark, Del., assignor to East Wind Industries, Inc., Dover, Del.
Filed Oct. 31, 1977, Ser. No. 846,947
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—2 **16 Claims**



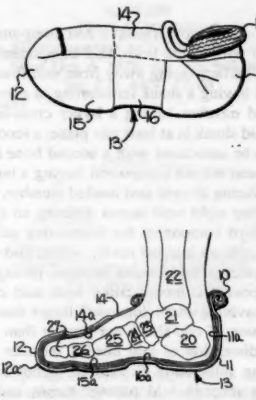
1. A wearable ventilation system comprising:
(a) a manifold of fabric material for receiving a ventilating gas and distributing same for ventilation;
(b) manifold inlet means defined in said manifold for receiving ventilating gas from a source and directing the flow of the gas into said manifold;
(c) manifold outlet means defined in said manifold to direct the ventilating gas for distribution; and
(d) gas distribution means formed of a flexible fabric material impregnated throughout with an elastomeric substance to prevent complete ventilation through the flexible fabric walls of said gas distribution means by preventing ventilating gas flow through the fabric material itself except at preselected desired locations, said gas distribution means defining a plurality of orifices therein to allow only controlled release of ventilating gas, only at preselected locations, through to the ventilated environment, said elastomer impregnated fabric material providing a flexibly walled gas distribution means in order to minimize movement restrictions and discomfort of the wearer, said gas distribution means connected in fluid flow communication with said manifold for receiving and distributing ventilating gas therefrom, said gas distribution means defining at least one port means therein to be positioned adjacent said manifold outlet means to facilitate said gas distribution means in receiving of ventilated gas from said manifold.

4,194,248
PROTECTIVE MITTEN
James A. Verschaeve, 52303 Chesterfield Rd., Mt. Clemens, Mich. 48043
Filed Sep. 13, 1978, Ser. No. 942,027
Int. Cl.[2] A41D *19/01*
U.S. Cl. 2—158 **1 Claim**

1. A protective mitten for the hand when the same is coated with a moist medication, said mitten comprising:
an inner layer, fabricated of a material selected from a group of materials consisting of rubber, polyvinyl chloride, and polyethylene and wherein the inner material is a semi-permeable moisture-proof membrane allowing air to pass therethrough but retaining moisture within said mitten; and
an outer layer fabricated from a material selected from a group of woven materials consisting of cotton, nylon and polyester or a combination thereof;
said inner and outer layers being laminated together to form a seamless mitten which defines a cavity therebetween to receive and loosely enclose said hand, said cavity having a first section adapted to receive the thumb of said hand and a second section adapted to receive the remaining fingers of said hand, said laminated layers having an opening through which said hand extends, said laminated layers having an elastic ring fitting around said opening to form a seal between said inner layer and the wrist of said hand for retaining the medication and perspiration within said cavity whereby said hand remains moist.



4,194,249
JOGGING AND RUNNING ATHLETIC SOCK
James L. Thorneburg, Statesville, N.C., assignor to Thorneburg Hosiery Co., Inc., Statesville, N.C.
Filed Feb. 14, 1979, Ser. No. 12,072
Int. Cl.[2] A41B *11/00*
U.S. Cl. 2—239 **6 Claims**



1. An athletic sock including ball, arch and heel terry areas and being particularly suitable for jogging and running by providing a greater amount of cushioning to the ball and heel than to the arch of the foot of the wearer, said sock being characterized by having a terry loop density in said arch area which is relatively less than the terry loop density in said ball and heel areas, said sock being knit throughout of body yarn, a first terry yarn knit with said body yarn and forming a first set of terry loops in said ball, arch and heel areas, and a second terry yarn knit with said body yarn and said first terry yarn in said ball and heel areas and forming a second set of terry loops

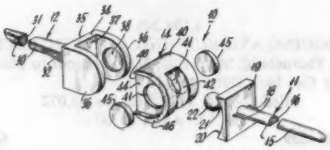
in said ball and heel areas, whereby said first and second sets of terry loops in said ball and heel areas form respective shock absorber cushions of greater terry loop density in said ball and heel areas than the terry loop density in said arch area for enhancing the cushioning provided in said ball and heel areas by absorbing and distributing shock on the ball and heel of the foot of the wearer and thereby reducing the shock normally imparted to the arch of the foot of the wearer so that normal articulation of the bones in the foot takes place when jogging and running.

4,194,250

LOAD-STABILIZING PROSTHETIC JOINT AND CONNECTING COMPONENT THEREOF

Peter S. Walker, Ridgewood, N.J., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Mar. 8, 1978, Ser. No. 884,777
Int. Cl.[2] A61F 1/24
U.S. Cl. 3—1.91 **11 Claims**



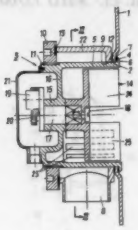
8. A prosthetic joint comprising: a first component adapted to be associated with a first bone, said component having an arcuate bearing surface facing away from said first bone, said first component having a shank terminating in a headed member, said headed member having a larger cross-sectional dimension than said shank in at least one plane; a second component adapted to be associated with a second bone adjacent to said first bone, said second component having a terminal portion at one end facing toward said headed member, said terminal portion having rigid wall means defining an open ended socket; and a third component for connecting said first and second components, an internal cavity within said third component for reception of said headed member, passage means in said third component communicating with said cavity, said passage means having a width dimension larger than the cross-sectional dimension of said shank but smaller than said larger cross-sectional dimension of said headed member, said third component being sufficiently flexible to permit said headed member to pass through said passage means and into said internal cavity, said rigid wall means on said second component embracing said third component and providing support therefor to prevent said headed member from passing outwardly of said passage means in use, said first component adapted to have lateral rocking movement with respect to said connected second and third components, and an arcuate bearing surface on said third component mating with the arcuate bearing surface on said first component, said bearing surfaces cooperating to carry the loading forces of and stabilize said joint in use, said joint including cooperative locking means between said second and third components responsive to contact by said headed member upon lateral displacement between said first and connected second and third components for preventing separation of said second and third components.

4,194,251

OVERFLOW VALVE

Walter Pennerstorfer, Dornbacherstrabe 93, A-1170 Wein, Austria

Filed Mar. 16, 1978, Ser. No. 887,247
Claims priority, application Austria, Mar. 31, 1977, 2260/77
Int. Cl.[2] E03C 1/232
U.S. Cl. 4—199 **4 Claims**



1. An overflow valve for coupling to an outlet pipe for a bath-tub or like receptacle, comprising:

a cup-shaped housing having a bottom and provided with apertures in a lateral wall for outlet of water and having an outwardly bent-over edge whereby said housing may be mounted in an opening in a side wall of the receptacle with said edge against the inside of said wall and substantially flush thereto;

an outer housing surrounding said cup-shaped housing and having an outlet for coupling to the outlet pipe;

said cup-shaped housing being further provided on its circumference with a threaded portion to receive a barrel nut for holding said outer housing and said cup-shaped housing securely to the receptacle, and said apertures of said cup-shaped housing being disposed over the outlet of said outer housing for direct vertical drainage of liquid in said cup-shaped housing through said apertures and through said outer housing outlet into said outlet pipe; and

means for actuating an outlet valve, said actuating means being mounted on the bottom of said cup-shaped housing and disposed over said apertures and, further, being recessed within the interior of said cup-shaped housing, said actuating means coupled to the outlet valve by a lift element means mounted on the bottom of the cup-shaped housing opposite from said actuating means.

4,194,252

BISTABLE TRIP OVERFLOW LEVER

Chang-Ling Tsuei, Los Angeles, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.

Filed Aug. 14, 1978, Ser. No. 933,486
Int. Cl.[2] E03C 1/24
U.S. Cl. 4—199 **4 Claims**

1. In a bistable drain plug trip lever mechanism:

(a) a mounting plate having a hole providing access between its outer side and its inner side;

(b) a trip lever projecting through the hole in the mounting plate, said lever having an outer handle end and an inner operating end; said operating end having a transverse opening;

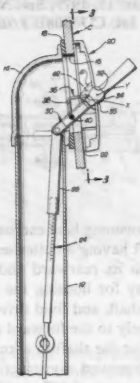
(c) said mounting plate and said lever having fulcrum means mounting said lever for angular movement, said fulcrum means defining a fulcrum axis;

(d) means determining opposite limits to tilting movement of said lever;

(e) means located on the inside of said mounting plate providing a bearing recess, said bearing recess defining a pivot axis spaced from, but substantially parallel to said fulcrum axis;

(f) a compression spring having one part projected through

said opening of said operating end of the lever to anchor said spring on said operating end, said spring having another part accommodated in said bearing recess; and



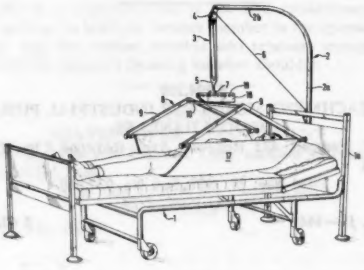
(g) said spring being compressed to maximum when said lever is tilted to an intermediate position in which said hole, pivot axis and fulcrum axis are aligned whereby said lever is bistable between said opposite limits.

4,194,253

PERSON-LIFTING DEVICE

Adolf G. Ullvén, Edingsvagen 1, 45100 Uddevalla, Sweden

Filed May 12, 1978, Ser. No. 905,517
Claims priority, application Sweden, May 16, 1977, 7705683
Int. Cl.[2] A61G *7/10*
U.S. Cl. 5—84 **6 Claims**



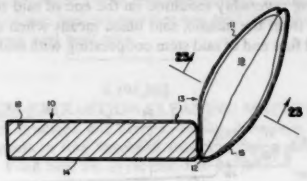
1. A lifting device, especially for use in connection with the care of a person confined to a bed, comprising: a vertically movable lifting element in the shape of a stiff yoke to extend transversely to the person, said yoke having a mid portion to extend above the person and ending in two opposite spaced corners, two spaced portions respectively extending downwardly from said two corners to extend on opposite sides of the person, said spaced portions being provided with brackets opening upwardly, a sheet-like carrying element for supporting the person during lifting, said element having two opposite ends with border hems, and two bar-shaped coupling means respectively passing through said hems, said coupling means having ends extending beyond said border hems and detachably received in said brackets, whereby said bar-shaped coupling means may be lifted out of said brackets.

4,194,254

FLOOR-SUPPORTED CUSHION ASSEMBLY AND METHOD OF MAKING SAME

Kay A. Torrez, 924 E. Washington, Phoenix, Ariz. 85034

Division of Ser. No. 836,737, Aug. 26, 1977, Pat. No. 4,116,148.
This application Aug. 4, 1978, Ser. No. 931,028
Int. Cl.[2] A47C *13/00, 7/14;* A47G *9/00*
U.S. Cl. 5—420 **9 Claims**



1. In a floor-supported cushion assembly:

(a) a rectangularly shaped fabric envelope having a seat end portion and a back end portion spaced from said seat end portion;

(b) a pad of foam material having the property of rigidity to a required degree removably received in said seat end portion;

(c) a pillow comprising a pillowcase filled with a shredded foam material removably received in said back end portion;

(d) a hinge between said end portions formed from the fabric of said envelope;

(e) said envelope having a centrally located longitudinal slot extending into both of said end portions; and

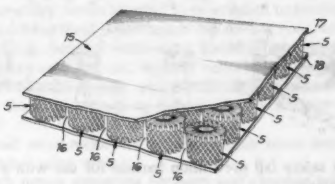
(f) a zipper attached to said envelope in said slot and operable to open and close said slot.

4,194,255

FOAM SPRING

Willy Poppe, Heimolenstraat 147, 2700 Sint-Niklaas, Belgium

Filed Oct. 6, 1978, Ser. No. 949,063
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—481 **14 Claims**



1. Elastic spring element, comprising a tubular body of synthetic foam material or the like, the wall of the body having a plurality of hollows arranged in staggered symmetry through its tubular wall, the cross-sectional width of which varies from practically zero at the inner surface of the body to a maximum value at the outer surface, no load being applied.

4,194,256

WIRE INSTALLING TOOL

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Mar. 6, 1978, Ser. No. 883,887
Int. Cl.[2] H01R *43/04*
U.S. Cl. 7—107 **7 Claims**

1. In a wire installing tool of the type having a handle, a stem having first and second reversible ends, said stem being revers-

ibly mounted on and extending from the handle, and blade means mounted on the stem, the improvement comprising:

a first recess on said first end of said stem;

a second recess on said second end of said stem;

the depth of one of said recesses being greater than the other;

mounting means on the first and second ends of said stem for receiving said blade means;

said blade means being shorter than said stem means and being reversibly mounted on the end of said stem extending from the handle, said blade means when mounted on said first end of said stem cooperating with said first end to

form a first cavity of first predetermined depth for installing wire on an electrical connector of first thickness and when mounted on said second end of said stem cooperating with said second end to form a second cavity of second predetermined depth for installing wire on an electrical connector of second thickness; and

said blade means having a first end with a cutting edge for shearing wire upon mounting on an electrical connector, and said blade means having a second blunt end for mounting wire on an electrical connector without shearing.

4,194,257

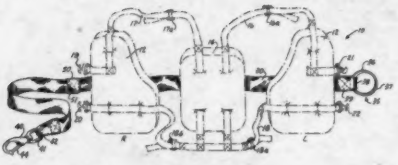
LIFE VEST SAFETY HARNESS

Kenneth R. Martin, Morgan City, La., and Clifford F. Drown, Rte. 1 P.O. Box 670, Morgan City, La. 70380, assignors to Clifford F. Drown, Morgan City, La.

Filed Jan. 30, 1978, Ser. No. 873,485

Int. Cl.[2] B63C *9/08*

U.S. Cl. 9—342 **10 Claims**



1. A safety fall prevention harness for use with a life vest, comprising:

a. an elongated flexible strap member;

b. means for securing said strap member to a conventional life vest, with said strap encircling and grasping the life vest and the human wearer;

c. buckle means at one end portion of said flexible strap member, said buckle means providing a slideable connection forming an adjustable loop with said strap about the life vest and the torso of the wearer; said strap contacting the outer surface portion of the life vest during operation; and

d. affixing means at the opposite end portion of said strap from said buckle means for affixing the end portion of said strap adjacent said affixing means to a desired point of security, said buckle means sliding to constrict said adjustable loop about the life vest when tensile force is applied to said affixing means as when the human wearer inadvertently falls.

4,194,258

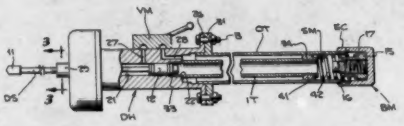
MACHINE FOR REAMING TUBES OF DIFFERENT LENGTHS

Lester L. Dillinger, 1569 W. 17th St., Long Beach, Calif. 90813

Filed Mar. 15, 1979, Ser. No. 21,108

Int. Cl.[2] B08B *9/02*

U.S. Cl. 15—104.1 R **6 Claims**



1. In a machine for reaming heat exchanger tubes, of the type including a drive shaft having a cutterhead on its forward end and a drive piston on its rearward end, means providing a cylindrical passageway for housing the drive piston and the rearward part of the shaft, and fluid drive means for applying fluid pressure alternately to the forward and rearward ends of the piston so as to drive the shaft in a longitudinal reciprocating movement, an improved construction for adapting the machine to heat exchangers of different lengths, comprising:

a drive head which incorporates the forward end of said passageway;

a pair of elongated concentric tubes;

means removably securing the forward ends of said tubes to the rearward end of said drive head so that the inner one of said tubes then provides the remainder of the cylindrical passageway;

means enclosing the rearward ends of said tubes but providing a fluid passageway therebetween; and

the drive shaft and said tubes being removable from said drive head for purpose of replacing them with like members having a length corresponding to the length of a particular heat exchanger whose tubes are to be reamed.

4,194,259

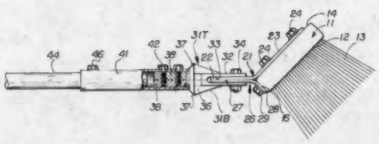
ATTACHMENT MEANS FOR INDUSTRIAL PUSH BROOM HANDLES

John F. Bauman, 432 Redwood Ave., Redwood City, Calif. 94061

Filed Aug. 28, 1978, Ser. No. 937,048

Int. Cl.[2] B25G *3/24*

U.S. Cl. 15—146 **5 Claims**



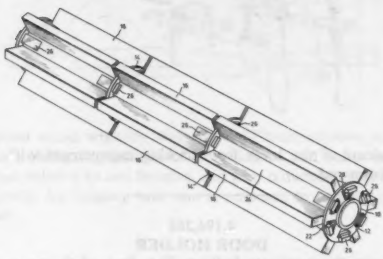
1. Attachment means to attach a handle to the back of a conventional push broom comprising a first member having a first flange fixed to the top face of said back, a second flange fixed to the back edge of said back and at least one upward-rearward extending broad, flat third flange, a clamp having first and second parts each being integral and rigid and having a plate and a proximal end, said third flange being rigidly clamped between said plates, and socket means secured to said proximal ends to receive an end of said handle.

4,194,260

ROTARY CLEANING DEVICE

Harry L. Culp, R.R. No. 1, Vineland, Ontario, Canada (L0R 2C0)

Filed Mar. 26, 1979, Ser. No. 24,124
Int. Cl.[2] B05C 1/00
U.S. Cl. 15—230.14 6 Claims



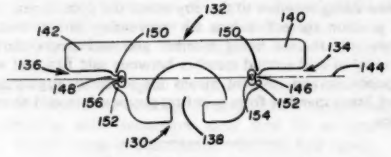
1. A rotary cleaning device comprising:
(a) a central longitudinal cylindrical mandrel adapted for mounting the device to rotate about the longitudinal axis of the mandrel;
(b) at least two spaced radial members mounted on the mandrel and extending radially therefrom and having retainer-receiving openings therein;
(c) a plurality of radially outwardly extending cleaning members disposed around the circumference of the mandrel and extending between the said two radial members;
(d) each cleaning member having along its length on opposite sides thereof circumferentially extending portions providing respective circumferentially extending shoulders spaced from the mandrel surface;
(e) two retainer members, each disposed between each two immediately adjacent cleaning members with its ends engaged in the said retainer-receiving openings of the two spaced radial members, and engaging the respective cleaning member shoulder, and
(f) a pair of axially-movable wedge members each engageable in a respective one of the said retainer-receiving openings to hold the retainer member in the opening and to urge the retainer member into retaining engagement with the engaged cleaning member shoulder.

4,194,261

HEATED WIPER ARRANGEMENT

Truman D. Parkinson, Chardon, Ohio, assignor to Tutco, Inc., Cookeville, Tenn.

Filed May 1, 1978, Ser. No. 901,532
Int. Cl.[2] B60S 1/04
U.S. Cl. 15—250.07 11 Claims



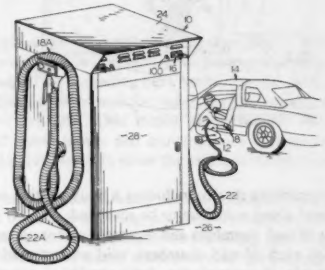
1. A heated wiper assembly for windshields and like surfaces comprising: an elongated wiper blade backing member constructed from a material designed to permit said member to flex over at least a portion of its longitudinal extent to conform to the contour of a surface to be wiped, said backing member having inner, outer and opposed side face areas with said inner face area having a wiper blade mounting groove extending longitudinally therealong and said backing member further including means for receiving an elongated heating element in operative communication therewith at least substantially over the longitudinal length thereof; an electrical heating element disposed in said receiving means; and means for preventing said heating element from being subjected to bending stresses imparted to said backing member during a wiping operation, comprising at least one inwardly extending open groove in said receiving means for receiving said heating element, said at least one groove comprising a wall area substantially located in the neutral zone of said backing member and said heating element extending along said wall area.

4,194,262

VACUUM EXTRACTION CLEANING MACHINE

Bill G. Finley, Bradford, and Terry L. Finley, Jonesboro, both of Ark., assignors to Rug Specialist Inc., Jonesboro, Ark.

Filed Sep. 29, 1978, Ser. No. 947,243
Int. Cl.[2] A47L 5/38
U.S. Cl. 15—314 5 Claims



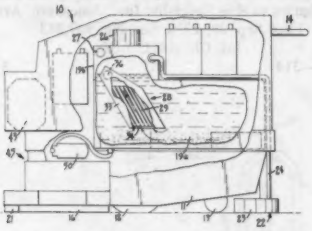
1. A vacuum extraction cleaning machine for cleaning upholstery, carpet and the like, said machine comprising:
cleaning tool means for spraying cleaning solution on an area to be cleaned and for vacuum extracting used cleaning solution and dirt thereby cleaning said area;
a pressurized source of cleaning solution, said source comprising:
a tank for containing concentrated chemical cleaner;
injector valve means adapted to be coupled to an external pressurized fresh water source for mixing concentrated cleaning chemical with water thereby outputting said cleaning solution, said injector valve means coupled to said chemical cleaner tank thereby siphoning and diluting chemical cleaner in response to fresh water flow; and
solenoid valve means for admitting fresh water into said injector valve means;
flow path means extending between said cleaning solution source and said cleaning tool for delivering cleaning solution to said tool;
means for generating vacuum during operation of said machine said vacuum generating means comprising an electrically driven motor;
vacuum tank means coupled to said vacuum generating means for temporarily storing used cleaning solution extracted be said tool;
hose means extending between said tool and said vacuum tank for supplying vacuum to said tool;
timer means for electrically activating said vacuum generating means and said solenoid valve means for a predetermined time; and
means for automatically draining said vacuum tank, said draining means comprising:
an output drain hole defined in said vacuum tank, said hole comprising a rigid periphery; and
flapper door means flexibly suspended from said vacuum

tank and adapted to sealingly contact said periphery for plugging said drain hole in response to vacuum existing inside said vacuum tank.

4,194,263
SCRUBBING MACHINE WITH WATER REGENERATION

Ferdinand J. Herpers, Minnetonka; Harley E. Kroll, Chaska; Alfred D. Carlson, Minneapolis, and Paul D. Dodge, Apple Valley, all of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Jun. 19, 1978, Ser. No. 916,929
Int. Cl.[2] A47L *11/30*
U.S. Cl. 15—353 **20 Claims**



1. A scrubbing device including a body portion suitable for movement along a surface to be scrubbed;

a pair of tank chambers and separator means communicating with each of said chambers, said separator means being capable of separating a dirty scrubbing solution into a clean solution portion and a solid matter portion, said separator means comprising a plurality of laminar flow zones, and said separator means conveying said clean portion into one of said chambers and said solid matter portion into the other of said chambers, said separator means including means for applying a back pressure to said laminar flow zones thereby minimizing short circuiting and non-uniform flow through said laminar flow zones;

applicator means communicating with said one tank chamber and adapted for applying scrubbing solution to a surface to be scrubbed;

means for metering the amount of scrubbing solution applied to said surface;

brush means for agitating said solution on said surface, and

pick up means for lifting said scrubbing solution from said surface and depositing said solution in said other tank chamber.

4,194,264
DOOR CHECK DEVICE

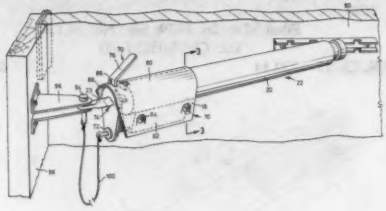
Gunter Stoffregen, P.O. Box 488, Coldwater, Ontario, Canada (L0K 1E0)

Filed Jul. 26, 1978, Ser. No. 928,184
Int. Cl.[2] E05F *3/10, 3/22*
U.S. Cl. 16—52 **12 Claims**

1. A latching device, for attachment to a door check unit having a cylinder and a piston with a piston rod, and serving releasably to secure a door in an open position, comprising:

a lever transversely disposable on the piston rod and freely slidable therealong, the lever being tiltable in the plane of the piston rod in one direction for releasable locking engagement therewith; and

cam and follower means engaging the lever and actuable from pre-set position to tilt the lever into locking engagement with the pistion rod when the door is opened beyond a predetermined limit and then released, the cam and follower means being returnable to said pre-set position on

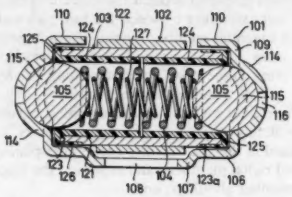


release of the lever from locking engagement with the piston rod.

4,194,265
DOOR HOLDER

Waldemar Zimmermann, Velbert, Fed. Rep. of Germany, assignor to Friedr. Fingscheidt GmbH, Velbert, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 133
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1978, 2800256
Int. Cl.[2] E05F *5/02*
U.S. Cl. 16—82 **23 Claims**



1. A door holder, particularly for a door of a vehicle, comprising an elongated housing having at least one first fixing member located on said housing in correspondence with a desired open position of the door; guiding means movable along said housing in response to movement of the door between its closed and at least one open position thereof, said guiding means including an elongated sleeve movable in said housing lengthwise thereof in response to movement of the door, at least one second fixing member movable together with said sleeve along said housing in response to movement of the door into said one open position, said second fixing member being movable between a first position, in which said second fixing member is disengaged from said first fixing member and a second position in which said second fixing member engages said first fixing member to thereby arrest the door in said one open position thereof; means for preventing direct contact between said second fixing member and said sleeve during movement of said second member between said first and second positions; and resilient means for normally urging said second fixing member from said first position into said second position.

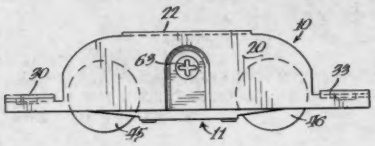
4,194,266
ADJUSTABLE ROLLER MECHANISM

Jerome W. Natzel, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Jun. 29, 1978, Ser. No. 920,148
Int. Cl.[2] E05D *17/00*
U.S. Cl. 16—99 **12 Claims**

1. An adjustable roller mechanism for a sliding closure comprising, a housing, a shaft rotatably mounted in said housing,

roller bracket means having roller means associated with said housing and movable transversely to the axis of rotation of said shaft, a cam rotatably mounted on said shaft and having a smooth, continuous cam surface engageable with said roller



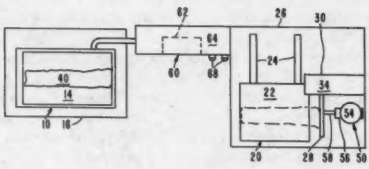
bracket means whereby said cam in different rotative positons causes different positions of extension of said roller bracket means relative to said housing, and gear reduction drive means operable for rotating said cam in response to rotation of said shaft.

4,194,267

HANDLING PORK LOINS

Walter W. Johnson, Downers Grove; Harry F. Bernholdt, Lombard; Robert E. Murphy, Downers Grove, and John G. Killebrew, Hoffman Estates, all of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,091
Int. Cl.[2] A22C *17/00*; B26D *5/20*
U.S. Cl. 17—52 **9 Claims**



1. An improved method of trimming meat items of variable non-uniform weight and size to an appropriate accurate weight selected from a plurality of acceptable weights, said method comprising:

establishing a series of at least two contiguous weight ranges from the available spread of individual weights of said meat items wherein for each said range the increments of weight above a base weight for each range tend to vary linearly with increments of length measured from one end of said meat items;

determining the linear relationship between increments of weight and increments of length measured from said one end of said meat items for each said range;

thereafter measuring the weight of each successive meat item;

generating a first signal for each successive meat item, said first signal representing the amount of weight of said item;

assigning each successive meat item to an appropriate weight range in accordance with said first signal;

converting each said first signal to a second signal representing a number of increments of length of said meat item measured from said one end thereof that will include the excess weight of said item above a base weight in said appropriate weight range;

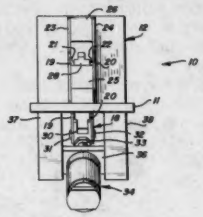
and severing a portion from each respective meat item measured by length from said one end, said portion being of a length corresponding to the number of increments represented by said second signal for each respective meat item.

4,194,268

APPARATUS AND METHOD FOR SEPARATION OF SAUSAGE CHUBS

Donald A. Deerwester, Lowell, Ind., assignor to George Pappageorge, Chicago, Ill., a part interest

Filed Sep. 28, 1978, Ser. No. 946,817
Int. Cl.[2] A22C *11/00*
U.S. Cl. 17—52 **17 Claims**



1. Apparatus for separation of sausage chubs which are interconnected by thin connecting portions, comprising: guide means arranged for extending between facing end surfaces of a pair of adjacent chubs and for receiving the associated connecting portion, and blade means supported for movement within said guide means and movable in a cutting direction within said guide means to sever the said associated connecting portion.

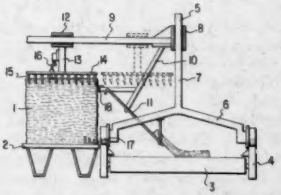
15. In a method of separating sausage chubs which are interconnected by thin connecting portions, the steps of providing blade means, providing guide means including spaced portions receiving the blade means therebetween, moving the guide means between a pair of chubs and into engagement with end surfaces thereof, and moving the blade means in a cutting direction within the guide means to sever the connecting portion.

4,194,269

APPARATUS FOR REMOVING COTTON OR THE LIKE FROM A BALE

Werner Reiche, and Hans Trützschler, both of München-Gladbach, Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,358
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704240
Int. Cl.[2] D01G *7/06*
U.S. Cl. 19—81 **8 Claims**



1. In the combination of a bale opener having a conveyor belt and side walls extending along the belt in the conveying direction thereof, and apparatus for removing cotton or the like from a stationary bale, which apparatus includes a first frame, a plurality of tines for penetrating into the fiber material of the bale, the tines being secured to the frame in juxtaposition with one another, a carrier supporting the first frame for horizontal displacement, and a second frame supporting the carrier for movement in a vertical direction to push the tines into the

upper layer of a bale, the improvement wherein: said tines extend vertically and are rigidly fastened to said first frame; and said apparatus further comprises a carriage supporting said second frame and including means disposed to be movable along said side walls of said bale opener for permitting horizontal movement of said carriage parallel to the conveying direction of said belt.

4,194,270

APPARATUS FOR LAYING FIBER FLEECES OR THE LIKE ON A MOVING WITHDRAWAL BELT

Eduard Hille, Hinderkingsweg 49, 4408 Dulmen i.W., Fed. Rep. of Germany

Continuation of Ser. No. 775,022, Mar. 7, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,012

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1976, 2609396; Dec. 3, 1976, 2654860

Int. Cl.[2] D04H *11/04*

U.S. Cl. 19—163 **4 Claims**

1. A device for uniformly laying fiber fleeces or the like delivered from a carding machine or the like onto a belt driven at a predetermined speed, said device comprising

(a) a feed belt extending between rollers;

(b) support means;

(c) a storage car, a layer car and a balance car;

(d) means mounting each of said cars on said support means for oscillating movement along respective substantially parallel paths, the path of said balance car being spaced from the end of said feed belt, the path of said storage car being below said feed belt and the path of said balance car, and the path of said layer car being below the path of said balance car;

(e) a first continuous conveyor belt extending below the end of said feed belt between spaced rollers on said storage car for receiving and conveying fleece in one direction along a path from said feed belt;

(f) a second continuous conveyor belt extending in said one direction from at least one roller on said balance car, about one end of the path of said first conveyor belt on a plurality of rollers on said storage car and then in the opposite direction to at least one roller on said layer car;

(g) means for driving said feed belt and said first and second conveyor belts, said drive means being adapted to drive said feed belt and said first conveyor belt at the same speed;

(h) flexible tension means connecting said balance car to said layer car, said flexible tension means passing over a roller on said storage car;

(i) reversible drive means for oscillating said layer car along its path;

(j) a fixed member extending along the path of said layer car and operatively connected through transmission means on said layer car to said at least one roller on said layer car, said transmission means being adapted to drive said at least one roller in a single direction as said layer car oscillates along its path; and

(k) a common continuous drive member extending from a roller driven by said first driven means, about rollers at opposite ends of said storage car and about a roller on said layer car and driven in one direction by said transmission means on said layer car;

(l) whereby said storage car with said first conveyor belt oscillates along its path at half the speed said layer car oscillates along its path, when the speed of said layer car is the same as the speed of said feed belt said balance car remains stationary and when the speed of said layer car differs from the speed of said feed belt said common continuous drive member changes the speed of said storage car to maintain it at half the speed of said layer car and said balance car moves along its path in a direction opposite to that of said layer layer to maintain said second conveyor belt under tension.

4,194,271

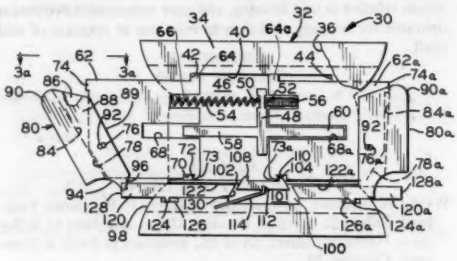
APPARATUS FOR RELEASABLY RETAINING ARTICLES IN POCKETS AND THE LIKE

Cecil E. Hamilton, 209 W. Lincoln Hwy., New Haven, Ind. 46774

Filed Apr. 28, 1978, Ser. No. 901,128

Int. Cl.[2] A44B *21/00*

U.S. Cl. 24—3 R **11 Claims**



1. Apparatus for releasably retaining articles in pockets and the like comprising:

a housing;

a channel being formed in said housing in a direction substantially transverse to the direction of article withdrawal from the pocket;

at least one slide having a first end having a predetermined lateral segment and remaining lateral segments and being reciprocably movable in said channel between an inward position wherein said slide is positioned substantially within said channel and an extended position wherein said first end is extending substantially without said channel in pocket side engageable position;

first means for resiliently urging said slide to said extended position;

second means for releasably retaining said slide in said inward position upon a predetermined inward movement from said extended position;

third means for obtaining said releasable retention upon said predetermined inward movement when manual force is selectively applied to a predetermined lateral segment of said first end of said slide but for selectively preventing said predetermined inward movement when manual force is applied to any of the remaining lateral segments of said first end of said slide.

4,194,272

DEVICE FOR SEAMLESS ATTACHMENT OF BUTTONS

Felice Taffurelli, Milan, Italy, assignor to Sauro Albertini, Viganello, Switzerland

Filed Nov. 6, 1978, Ser. No. 957,990

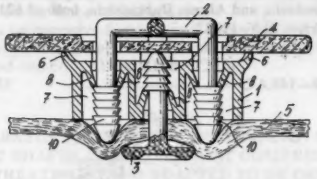
Claims priority, application Italy, Nov. 14, 1977, 2933 A/77

Int. Cl.[2] A44B *1/28, 1/18*

U.S. Cl. 24—90 R **7 Claims**

1. A device for seamless attachment of buttons intended to be used on buttons having conventional holes, the device comprising a base element to be placed under the button, said base element including through holes designed to coincide with the button holes, and wherein retaining means are provided within said through holes for a fastening counter-element of the button, fastening means to be inserted in the button holes and designed for engagement with flats or projecting

ridges thereof in said retaining means provided in said through holes, and at least one fastening head for insertion through the



fabric or cloth material, intended to pass through retaining means provided in a through hole of said base element.

4,194,273

ATTACHMENT FOR FISHING LINES AND TACKLE

Ross S. Williams, 48 Karingal Dr., Frankston, Victoria, 3199, Australia

Filed Feb. 21, 1978, Ser. No. 879,495
Claims priority, application Australia, Feb. 21, 1977, PC9125
Int. Cl.[2] A01K *91/04*
U.S. Cl. 24—222 **6 Claims**

1. An attachment for fishing lines and tackle comprising moulded thermoplastic first and second members adapted for interlocking attachment to each other, said first member having ring means for the attachment of one or more fishing lines, said ring means having a central opening of irregular dimensions whereby a plurality of peripheral indentations are formed providing predetermined spaced line tying positions; said first member also having a stud with enlarged head for receiving and retaining said second member in locking engagement, said second member having a keyhole opening enabling said second member to pass over said stud and secure therebehind, said second member having an additional slot extending radially outwardly of the larger portion of said keyhole opening thereby providing for the attachment of a fishing line diametrically opposite the slot of said keyhole opening.

4,194,274

GARMENT GRIP CONSTRUCTION FOR HANGERS

Judd F. Garrison, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.

Filed Apr. 6, 1978, Ser. No. 893,962
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—248 R **10 Claims**

1. An improved clamp usable for clamping garments in a generally vertical orientation, said clamp comprises:

a first clamp member having an inner surface;

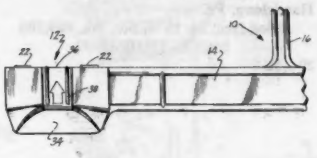
a second clamp member having an inner surface;

biasing means engaging said members for biasing said inner surfaces towards each other to exert a clamping force on an article placed between said members when said inner surfaces are in opposed, clamping relationship;

a first elongated ridge having a smoothly rounded crest and extending outwardly from said inner surface of said first clamping member;

a second elongated ridge extending from said inner surface of said first clamp member in spaced, generally parallel relationship with said first ridge to thereby define an elongated recess between said ridges, said second ridge having a smoothly curved surface having a radius of curvature greater than the radius of curvature of the crest of said first ridge;

a third ridge extending from said inner surface of said second clamp member, said third ridge extending at least partially into said elongated recess when said inner surfaces are in opposed clamping relationship whereby the clamping force generated by said biasing means has a vertical component along said second and third ridges and said article is clamped along line contact areas so that the clamping pressure on the article is increased; and



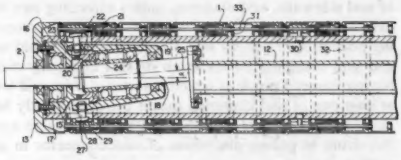
a plurality of elongated bar-like teeth, each having a length greater than its width and extending outwardly from said ridges and into an article clamped therebetween, said teeth being generally V-shaped in section and being tandemly arranged in a plurality of parallel rows wherein said inner surface of said second clamp member defines a concavity conforming to the surface of said second ridge and extending the width of said second clamp member.

4,194,275

SPREADER ROLL

Fred H. Freuler, Bännlistrasse, Riedholz, Switzerland

Filed Sep. 1, 1977, Ser. No. 829,906
Claims priority, application Switzerland, Sep. 10, 1976, 11532/76
Int. Cl.[2] D06C *3/06*
U.S. Cl. 26—100 **7 Claims**



1. A spreader roll for processing machines of the type used in the paper, textile and plastics industries, comprising

a stationary shaft;

a carrier roll rotatably mounted on said shaft; a cylindrical roll body mounted about said shaft to rotate with said carrier roll, said roll body formed of a plurality of rigid cylinder-segments;

means for arranging said cylinder-segments about said carrier roll in parallel rows along the mantel lines of said roll body and for interconnecting said cylinder-segments to permit said cylinder-segments to move relative to each other and to have interdependent torque within said rows, said means comprising a plurality of separate, substantially rigid ring elements which encircle said carrier roll and hold said cylinder-segments in a radial direction, said ring elements being spaced from said carrier roll and freely movable relative thereto;

control means for moving said cylinder-segments mounted

on said shaft to rotate with and inside of said roll body, the ends of said cylinder-segment rows being coupled to said control means;

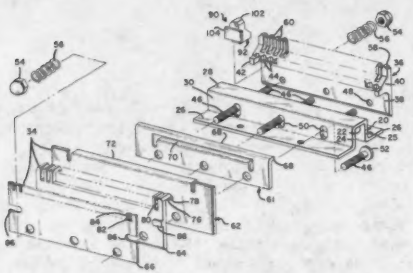
whereby said cylinder-segments may be moved back-and-forth in a direction parallel to the longitudinal axis of said roll body upon rotation of said roll body, which movement being repeated with every revolution of said roll body.

4,194,276

CONNECTOR HOLDING FIXTURE

Daniel B. Grubb, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 14, 1978, Ser. No. 969,503
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—56.6 **10 Claims**



1. A fixture for supporting an electrical connector in a predetermined position and for locating conductors in spaced relationship to the conductor-receiving portions of terminals in said connector preparatory to the insertion of said conductors into said conductor-receiving portions, said fixture comprising:

a channel-shaped frame member having a web and sidewalls, said web having an external surface which constitutes a connector supporting surface,

first and second connector clamping means, each of said clamping means being against the external surface of one of said sidewalls, said clamping means extending past said external surface of said web whereby a connector-receiving pocket is formed by said external surface of said web and said clamping means, each of said clamping means having free end portions which are spaced from said web, at least one of said clamping means being resiliently held against its respective sidewall and being movable away therefrom to permit placement of said connector in said pocket,

conductor locating means in said free end portions of said connector clamping means for locating said conductors in said free ends with portions of said conductors extending across said pocket,

connector locating means for locating said connector on said connector supporting surface with said conductor-receiving portions of said terminals in alignment with conductors in said conductor locating means, said connector locating means comprising spaced-apart projections on one of said clamping means which are received in spaced-apart recesses in said connector, said projections being spaced-apart by distances which are the same as the spacing between said conductor-receiving portions of said terminals in said connector, whereby,

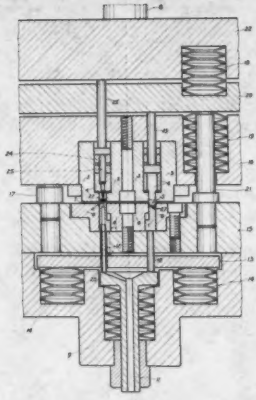
upon placement of said connector in said pocket and on said supporting surface, and placement of said conductors in said conductor locating means, said conductors can be moved laterally of their axes and into said conductor-receiving portions of said terminals.

4,194,277

METHOD AND DEVICE FOR STAMPING BALL RETAINERS

Efim Rubinshtein, and Abram Rubinshtein, both of 621 Avenue Z, Brooklyn, N.Y. 11223

Filed Nov. 13, 1978, Ser. No. 959,414
Int. Cl.[2] B21D *53/12*
U.S. Cl. 29—148.4 C **13 Claims**



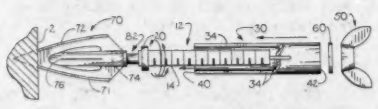
1. A method of stamping ball retainers from a metal band, comprising the steps of: pressing the metal band against a first punch to form rectangular platforms in the band, said first punch having rectangular lugs and spherical recesses; pressing a second punch against an opposite side surface of said band to the surface pressed against said first punch to form spherical seats on said band, said second punch having spherical lugs and rectangular recesses; calibrating said band by compressing said punches and said band together; and cutting out a ball retainer from the band.

4,194,278

BROADHEAD AND FIELD POINT EXTRACTOR TOOL

Fletcher T. Sanders, 2147 E. Southern, Phoenix, Ariz. 85040

Continuation-in-part of Ser. No. 563,791, Mar. 31, 1975, abandoned. This application Jul. 24, 1978, Ser. No. 927,652
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—264 **1 Claim**



1. In combination with an existing arrowhead, said arrowhead including,

a body, and

blades attached to and outwardly projecting from said body, a device for extracting said arrowhead from an object in which said arrowhead is embedded and for minimizing the probability said arrowhead will be bent while being extracted, said device comprising,

(a) a rod detachably fixedly engaging said arrowhead such that the longitudinal axis of said arrowhead and of said rod are coaxial,

(b) an elongate sleeve having,

(i) a longitudinal axial bore sized to slidably receive said rod, and

(ii) longitudinal slots equally spaced circumferentially

about said sleeve, extending from one end of said sleeve receiving said blades of said arrowhead, and

(c) means, engaging said rod, to simultaneously apply

(i) a tensile force to said rod, and

(ii) a compressive force to said sleeve such that said arrowhead is drawn from and said sleeve is forced against said object.

4,194,279

APPARATUS FOR SUPPORTING TWO UNIVERSAL JOINT SHAFTS AND EQUIPMENT COMPRISING A STRIP-TREATING STAND ADAPTED TO BE DRIVEN BY SAID UNIVERSAL JOINT SHAFTS

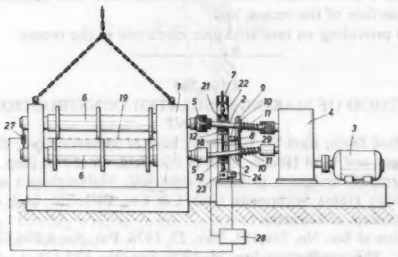
Hubert Haslhofer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Aug. 4, 1978, Ser. No. 931,396

Claims priority, application Austria, Sep. 27, 1977, 6881/77

Int. Cl.[2] B25B *27/14*

U.S. Cl. 29—281.5 **14 Claims**



1. For use with two universal joint shafts arranged one over the other and adapted to be coupled to respective working shafts of a strip-treating stand and to drive said working shafts and to be shortened so as to be uncoupled from said working shafts,

apparatus for supporting said universal joint shafts when they are uncoupled from said working shafts, said apparatus comprising,

a support,

a carrier carried by said support and adjustable in height relative to said support,

two seating structures, which are carried by said carrier and adjustable in height relative thereto and have respective upwardly facing bearing surfaces engageable with respective ones of said universal joint shafts and adapted to support and clear the same, and

a seat-adjusting mechanism carried by said carrier and operatively connected to said seating structures and operable to adjust said bearing surfaces in height relative to said carrier only by equal distances in opposite directions.

4,194,280

PROCESS FOR THE MANUFACTURE OF RIGID AND IMPERVIOUS INSULATING PANELS

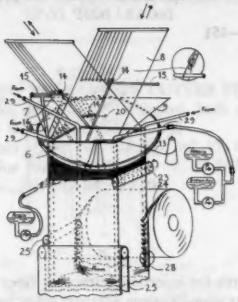
Michel Gondouin, 32 San Marino Dr., San Rafael, Calif. 94901

Filed Aug. 10, 1976, Ser. No. 713,231

Int. Cl.[2] B23P *17/00*; B29C *17/14*; B29D *27/04*

U.S. Cl. 29—417 **16 Claims**

1. A process for making in a continuous operation an insulating fiberglass reinforced rigid foam panel of indefinite length and of parallelogram-shaped cross section, characterized by the following steps:1/ fabricating a tubular glass fabric envelope to which are attached glass reinforcing fibers oriented along three principal directions oblique with respect to the panel face, so that the resultant tension of said fibers is directed perpendicularly to the panel face, 2/ stretching said envelope and glass fiber over a holding frame, 3/ impregnating said glass fabric envelope with a thermosetting resin so as to make said envelope impervious to gas, 4/ folding of a metallic membrane so as to fasten its edges along the edges of said impervious envelope, 5/ filling said impervious envelope with a foaming gas saturated liquid resin so as to occupy the entire space



separating said glass fibers, 6/ heat curing said expanded resin into a rigid foam, 7/ releasing said foam filled impervious envelope from the stretching forces applied by said holding frame so as to subject said rigid foam to compressive stresses applied primarily along the direction perpendicular to said panel face.

4,194,281

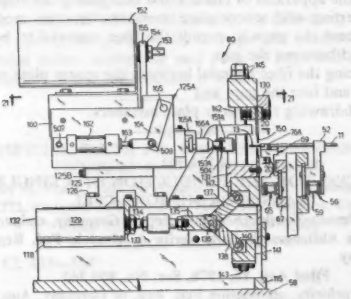
APPARATUS AND METHOD FOR STRIPPING WIRE LEADS

Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed Sep. 25, 1978, Ser. No. 945,563

Int. Cl.[2] H02G *1/12*; B21F *7/00*

U.S. Cl. 29—867 **12 Claims**



7. A method of processing a wire comprising a stranded conductor covered with insulation comprising the steps of:

cutting into said insulation by means of a blade to provide a cut portion of insulation;

maintaining said blade adjacent said stranded conductor after cutting into said insulation;

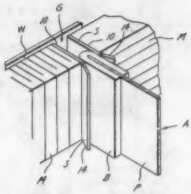
rotating said cut portion of insulation relative to said stranded conductor therewithin to effect twisting of said stranded conductor;

and axially moving said cut portion of insulation relative to the twisted conductors to effect stripping while maintaining said wire axially stationary relative to said blade.

4,194,282
METHOD AND APPARATUS FOR FILLING SEAMS BETWEEN ADJACENT FIBER BLANKET INSULATION MODULES

Carlisle O. Byrd, Jr., Houston, Tex., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Apr. 28, 1978, Ser. No. 901,114
Int. Cl.[2] B23P *11/02*
U.S. Cl. 29—451 11 Claims



1. Apparatus for inserting refractory fiber blanket material to fill a gap or seam between adjacent refractory fiber modules, comprising:

(a) plural spacer plate members for insertion into a gap or seam between adjacent modules to permit insertion therein of the fiber material, wherein each of said plural spacer plate members comprises:

(i) a plate member having an inner portion extending inwardly a length substantially equal to the thickness of the modules;

(ii) said plate member having a width along at least said inner portion substantially equal to the width of the seam to be filled; and

(iii) said plate member further having an outer portion extending away from said gap or seam and said inner portion at an angle thereto to exert a compressive force on the fiber material as the material is forced inwardly by a pusher means; and

(b) said pusher means for forcing the fiber material into said plural spacer plate members to fill the gap between adjacent modules.

7. A method of filling gaps or seams between adjacent refractory fiber modules with refractory fiber blanket material, utilizing the apparatus of claim 1 and comprising the steps of:

(a) inserting said spacer plate members between modules adjacent the gaps to permit the fiber material to be inserted between the gap;

(b) forcing the fiber material between the spacer plate members and into the gap; and

(c) withdrawing the spacer plate members.

4,194,283
PROCESS FOR THE PRODUCTION OF A SINGLE TRANSISTOR MEMORY CELL

Kurt Hoffmann, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,263
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737073
Int. Cl.[2] H01L *21/22*
U.S. Cl. 29—571 13 Claims

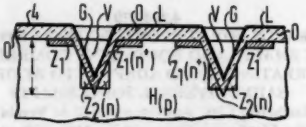
1. A method for producing a single transistor memory cell comprising the steps of:

(a) providing a semiconductor body of first conductivity type having a major surface;

(b) doping the body at a first area on the major surface to create a first zone extending from the major surface to a given depth and of second conductivity type opposite to the first conductivity type;

(c) doping the body at a second area on the major surface and adjacent to the first to create a second zone extending from the major surface and of substantially lesser depth and of second conductivity type and a substantially higher conductivity than the first zone so that a pn junction at the second zone and the semiconductor body has a higher capacity than a pn junction at the first zone;

(d) after doping at the first and second areas then producing a recess in the first zone from the major surface, said



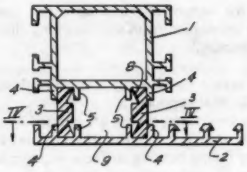
recess laterally extending at the major surface beyond the first zone to the second zone and becoming narrower below the major surface such that the first zone reaches a surface of the semiconductor body within the recess and at a level below where the second zone also reaches a surface of the recess; and

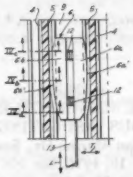
(e) providing an insulated gate electrode in the recess.

4,194,284
METHOD OF MAKING INSULATED CONSTRUCTION ELEMENT

Manfred Diels; Karl W. Dienstuhl, both of Meinerzhagen; Tilo Jäger, and Eitel Höcker, both of Bielefeld, all of Fed. Rep. of Germany, assignors to Otto Fuchs KG, Meinerzhagen and Schüro Heinz Schürmann GmbH & Co., Bielefeld, both of, Fed. Rep. of Germany

Division of Ser. No. 744,177, Nov. 22, 1976, Pat. No. 4,096,628.
This application Jan. 24, 1978, Ser. No. 872,121
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1975, 2552700
Int. Cl.[2] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 7 Claims





1. A method of making a construction element, comprising the steps of sequentially positioning two elongated metallic profiles each formed with a pair of flanges forming a longitudinally extending groove parallel and opening toward each other; fitting an elongated bar of insulating material having a pair of longitudinally extending sides between said profiles with each of said sides received in a respective groove, and plastically and permanently deforming one of said flanges of

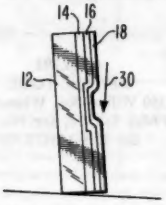
each of said pairs into tight contact with said bar, said bar being formed at each of said sides with a recess opening laterally toward the respective one flange and each of said profiles being formed adjacent said one flange with a second flange, said permanent deformation being effected under displacement of the material of said one flanges into said recesses and by means of a tool having two faces and which is drawn longitudinally along said profiles with one face braced against said second flanges and the other face bearing on and deforming said one flanges.

4,194,285

METHOD OF MAKING A FIELD EFFECT TRANSISTOR

Jitendra Goel, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 15, 1978, Ser. No. 915,653
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—579 **7 Claims**



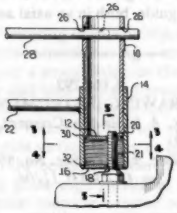
1. A method of making a field effect transistor comprising the steps of:
   (a) forming a recess in the surface of a body of semiconductor material,
   (b) depositing a layer of a metal on said surface of the body and the surface of said recess,
   (c) providing a layer of a photoresist over the metal layer,
   (d) subjecting the photoresist to light whose rays are at a small angle with respect to the surface of the body to so completely expose a narrow strip of the photoresist along an edge of said recess,
   (e) removing the completely exposed strip of the photoresist and the portion of the metal layer exposed thereunder,
   (f) forming a groove in the portion of the semiconductor body exposed by the removal of the portion of the metal layer, and
   (g) depositing a metal layer on the bottom of the groove.

4,194,286

JOHNNY BOLT CUTTER

Paul Kearns, 12009 Judson Rd., Wheaton, Md. 20902

Filed Sep. 2, 1977, Ser. No. 830,137
Int. Cl.[2] B26B *25/00*
U.S. Cl. 30—226 **2 Claims**



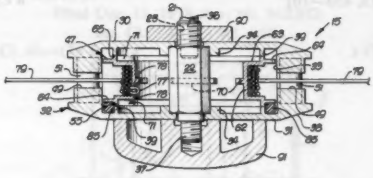
1. A cutting tool comprising an internally threaded pipe having its bottom end closed by a plate with an eccentrically located hole,
   an externally threaded pipe having a closed bottom end formed by a plate with at least one eccentrically located hole,
   said externally threaded pipe being threaded into said internally threaded pipe, and
   handle means for forcibly turning said pipes relatively to each other when mounted over a bolt end passing through said holes to break or cut said bolt at the hole in said outer plate.

4,194,287

NYLON LINE VEGETATION CUTTER FEED

Vincent A. Palmieri, and John P. Palmieri, both of 3745 El Camino Dr., San Bernardino, Calif. 92410

Continuation-in-part of Ser. No. 925,045, Jul. 17, 1978. This application Mar. 1, 1979, Ser. No. 16,563
Int. Cl.[2] A01G *3/06*
U.S. Cl. 30—276 **6 Claims**



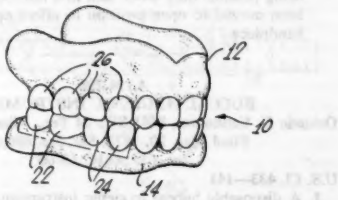
1. In a flexible-line-whirling vegetation cutting hand tool, a rotary head for which is provided to be supported on and manipulated by a relatively long handle, the handle being equipped with power means for rapidly spinning said head on a vertical axis, the improvement comprising the following combination:
   a housing including a pair of complementary upper and lower housing portions united in an abutting relation in the radial vegetation cutting plane of the tool;
   matching opposed notches in meeting edges of said housing portions forming line emitting windows;
   matching, opposed, axially aligned roller capturing pairs of cups being formed in said housing portions circumferentially bordering said windows;
   means confined within said housing for delivering a supply of cutting line peripherally through said windows; and
   tubular rollers occupying said pairs of cups and captured thereby when said housing is assembled.

4,194,288

ARTIFICIAL TEETH THAT MINIMIZE STRESSES ON DENTURE SUPPORTING TISSUE

Martin A. Hass, 1105 El Medio Dr., Pacific Palisades, Calif. 90272, assignor to Martin A. Hass, Los Angeles, Calif.

Filed Feb. 6, 1978, Ser. No. 875,300
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—197 **8 Claims**



1. An artificial posterior tooth that minimizes side stresses comprising:

a substantially flat surface forming a major portion of the occlusal surface and lying within the plane of lateral tooth movement;

a channel for positioning bolus of food extending along the occlusal surface from one end of said tooth to the other, said channel dividing said flat surface into buccal and lingual portions; and

at least one spillway extending across at least one of said portions of said flat surface to said channel, thereby permitting the escape of fluids and comminuted material.

4,194,289

AIR AND WATER SUPPLY SYSTEM FOR DENTAL HANDPIECES

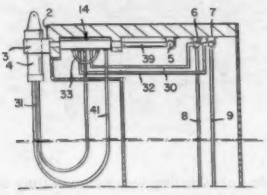
Vincenzo Neri, Corso Galileo Ferraris 104, Turin, Italy

Filed Sep. 20, 1978, Ser. No. 944,223

Claims priority, application Italy, Sep. 22, 1977, 69093 A/77

Int. Cl.[2] A61C *19/02*

U.S. Cl. 433—101 **6 Claims**



1. A system operable to control the supply of air under pressure and water to a dental handpiece of the air turbine-type held when not in use upon a support, said system comprising in combination:

(a) a first foot-actuated control valve connectable in a circuit between a handpiece and a source of air under pressure,

(b) a first intercepting valve downstream in said circuit with said first control valve and movable to open position to deliver air to drive said handpiece when said first foot-actuated valve is moved to open position to cause air to move said first intercepting valve to open position,

(c) a second intercepting valve in a circuit between a handpiece and a source of water,

(d) means connected to said first intercepting valve and adapted to be engaged by a handpiece when held in rest position within a support to prevent moving said second intercepting valve to open position but rendering said valve movable to open position upon removing said handpiece from said support, and

(e) a second foot-actuated control valve connectable to a source of air under pressure and in said circuit of said second intercepting valve, whereby when said second control valve is opened air is delivered to said second intercepting valve to open the same for delivery of water to said handpiece,

(f) said movement of said second foot-actuated control valve being possible only when said first intercepting valve has been moved to open position to effect operation of said handpiece.

4,194,290

BUCCAL HYGIENIC INSTRUMENT

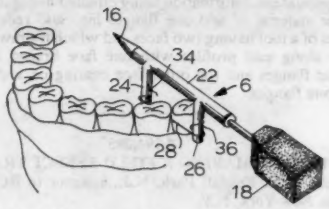
Orlando D. Vallhonrat, 8461 SW. 84 Ter., Miami, Fla. 33143

Filed Mar. 20, 1978, Ser. No. 890,636

Int. Cl.[2] A61C *15/00*

U.S. Cl. 433—141 **9 Claims**

1. A disposable buccal hygienic instrument comprising an elongate member having a pointed first end comprising a toothpick and an opposite second end, said elongate member including an intermediate zone and a laterally extending peg on the intermediate zone spaced from and adjacent the pointed end and another laterally extending peg on the intermediate zone adjacent the second end and each of said pegs being spanned by a strand of dental floss and means securing the ends



of the dental floss to the pegs in spanning relation thereof; and a cleansing means fixed to the second end completely covering the same and said cleansing means including cleansing material.

4,194,291

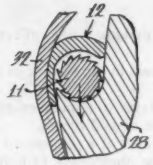
DENTAL TOOL

Henry O. Gold, 1250 Willow Rd., Winnetka, Ill. 60093

Filed May 1, 1978, Ser. No. 901,687

Int. Cl.[2] A61C *3/02*

U.S. Cl. 433—75 **2 Claims**



1. A dental instrument for preparing the gingival or cervical area of a tooth for receiving a tooth coverage, or crown, consisting of a rotary driven cutting instrument, a guide disposed adjacent to said cutting instrument and freely rotatable relative thereto, said guide surrounding a portion of said cutting instrument and defining at its lower end a shield which prevents the cutting instrument from contacting that which is protected by said shield, and a guide that limits the horizontal depth of cut and the vertical depth of cut into the tooth providing a uniformly prepared surface, the guide further defining indicia means at its lower end to clearly indicate the depth of penetration of said guide when the tool is used to prepare a tooth below the gum crest, said guide also defining a blunt end portion adapted to contact the bottom of the crevice and rest positively against the tooth surface beyond the rotary cutting instrument in which the guide is located to define the limit of penetration of said guide, both in an axial and horizontal direction.

4,194,292

DRAWING INSTRUMENT

Tadeusz P. Wojcik, 4 Neilwrith Crescent, Guelph, Ontario, Canada (NIE 6J2)

Filed Dec. 9, 1977, Ser. No. 859,170

Int. Cl.[2] B43I *11/04*

U.S. Cl. 33—30 C **7 Claims**

1. A drawing instrument comprising:

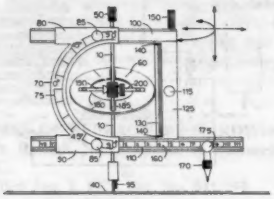
a vertical post;

a circular annular disc having an enlarged central opening, said post passing through the center of the disc;

manually adjustable means removably securing said disc to said post, said adjustable means permitting the angle be-

tween the plane of the disc and the axis of the post to be set at any valve between X and −X, where X as expressed in degrees can range between 0 and somewhat less than 180;

a first elongated vertical member having a central section in the form of a semicircle with horizontally elongated upper and lower hollow tracks at corresponding upper and lower ends of the section extending in the same direction and coplanar with the section, said post passing through said ends and tracks with clearance whereby said member can be moved vertically up and down with respect to the post and can also be rotated about the post;



a second elongated vertical member having a straight vertical central section provided with a guide mechanism separated therefrom and engagable with and disengagable from the outer periphery of the disc, said member having parallel horizontal upper and lower rails at corresponding upper and lower ends of the straight section, each of the rails slidably engaging a corresponding one of the tracks, said rails being horizontally movable in said tracks;

and marker means slidably engaging the lower rail and securable thereto.

4,194,293

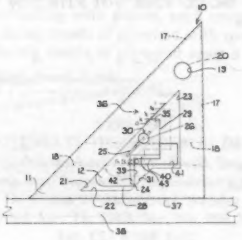
LETTERING TRIANGLE

Stanley S. Coe, 3515 Glenwood Ave., Raleigh, N.C. 27612

Filed Apr. 9, 1979, Ser. No. 28,207

Int. Cl.² B43L *13/02*

U.S. Cl. 33—448 **8 Claims**



1. An adjustable lettering device, comprising:

(a) a thin flat plate member having a straight base side for slidably engaging a straightedge, or the like, during lettering and above said base side and inwardly of the boundaries of said plate member above said base side a defined flat slide surface formed on the top surface of said plate member, said slide surface having an opening for lettering located within the boundaries thereof and bounded by a lower lettering guide edge parallel to said base side;

(b) a thin flat guide member adapted to reside within the boundaries of said slide surface and slide thereon along a defined path above said opening, said guide member being formed in a lower right corner portion thereof with an open right angle notch formed by intersecting horizontal and vertical lettering guide edges parallel and perpendicular respectively to said base edge and adapted for adjustable positioning over said opening as said guide member is slid along said path;

(c) adjustable means for securing said guide member on said plate member in a selected position with respect to said opening whereby the vertical spacing between said plate member opening lower lettering guide edge and said guide member horizontal lettering guide edge and the length of said guide member vertical lettering guide edge can be regulated according to the size lettering desired; and

(d) mating measuring indicia formed on said plate and guide members enabling said guide member to be indexed on said plate member by matching respective indicia on said members according to the size lettering desired.

4,194,294

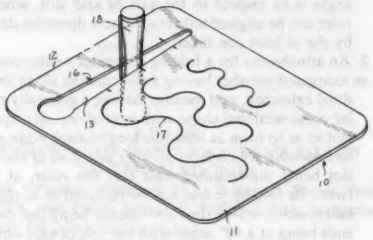
DEVICE IN PERMANENT WAVING

Gustave J. Klein, Great Neck, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 967,953

Int. Cl.² G01B *5/08, 5/00*

U.S. Cl. 33—178 B **3 Claims**



1. A device for selecting a curling rod of a specified diameter to provide a curl of selected size and configuration in permanent waving with a reducing medium of known compostion, comprising a card which is provided with a horizontal tapered slot which has an enlargement beyond its widest end, a plurality of pairs of aligned vertical guide lines both above and below the slot, and in substantial alignment with each pair of guide lines a depiction of a curl showing its approximate size and configuration as obtained by the use of the curling rod of the measured diameter.

4,194,295

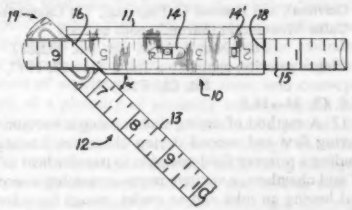
LEVEL AND ANGLE ATTACHMENT FOR A CARPENTER'S FOLDING RULER

Ernest G. Simuro, 624 Fenimore Rd., Mamaroneck, N.Y. 10543; Abraham A. Turk, and Nathan M. Turk, both of Rocking Horse Ranch, Highland, N.Y. 12528

Filed Aug. 17, 1978, Ser. No. 934,415

Int. Cl.² G01B *3/06*

U.S. Cl. 33—458 **10 Claims**



1. An attachment for a folding carpenter's ruler comprising:

an elongated member formed of first and second elongated bodies having a slot running along its longitudinal extension, said member having a generally rectangular cross-sectional shape with part of one side open to the slot so as to form two opposed longitudinal ridges, one each of the two opposed ridges being located on a separate one of the first and second bodies, said slot being dimensioned such that the ruler, at least between its folding joints, can be received in it, the ends of said member where the ruler extends being flat, one of said ends being at a 90° angle with the axis of said slot and the other being at some other angle less than 90°, said ends being designed such that a folding ruler inserted in said slot can be folded against one of the ends of the member so as to form an angle related to the angle between that end and the axis of the slot;

spring means for allowing the distance between the longitudinal ridges to be increased to such an extent that the ruler can be seated in the slot via the open side of the member, said spring means being at least one spring for holding the first and second bodies together so that the open side of the slot can be increased by exerting a force to expand said spring; and

at least one level located on said member at a predetermined angle with respect to the axis of said slot, whereby the ruler can be aligned with respect to a direction determined by the at least one level.

2. An attachment for a folding carpenter's ruler comprising:

an elongated member having a slot running along its longitudinal extension, said member having a generally rectangular cross-sectional shape with part of one side open to the slot so as to form at least one longitudinal ridge along the slot opening which faces another side wall of the slot, said slot being dimensioned such that the ruler, at least between its folding joints, can be received in it, the ends of said member where the ruler extends being flat, one of said ends being at a 90° angle with the axis of said slot and the other being at some other angle less than 90°, said ends being designed such that a folding ruler inserted in said slot can be folded against one of the ends of the member so as to form an angle related to the angle between that end and the axis of the slot;

spring means for allowing the slot opening to be increased to such an extent that the ruler can be seated in the slot via the open side of the member, said spring means being formed by a longitudinally bent band of spring material located in the slot along said another side wall of the slot so as to form a ridge opposing the at least one longitudinal ridge of the elongated member such that the open side of the slot can be increased by exerting a force to flatten the bend in said spring material; and

at least one level located on said member at a predetermined angle with respect to the axis of said slot, whereby the ruler can be aligned with respect to a direction determined by the at least one level.

4,194,296

VACUUM DRYING KILN

Vincenzo Pagnozzi, Via Ponte Romano, Rocchetta di Cairo (Savona), and Ernesto G. Pagnozzi, Via Camponuovo, Loppa, Cairo Montenotte (Savona), both of Italy

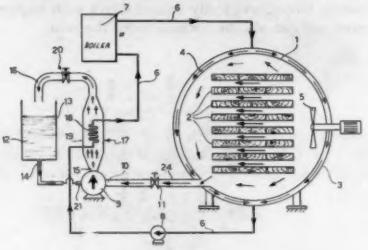
Filed May 4, 1978, Ser. No. 902,632
Claims priority, application Italy, May 17, 1977, 68116 A/77
Int. Cl.² F26B 5/04
U.S. Cl. 34—16.5 **15 Claims**

12. A method of drying timber using a vacuum drying kiln having first and second drying chambers, heating means including a primary fluid operable to transfer heat to the interior of said chambers, a vacuum pump containing a secondary fluid and having an inlet and an outlet, means for selectively connecting the inlet to one of said chambers, a heat exchanger having a primary and secondary circuit and conduit means for selectively connecting said chambers directly to each other, comprising the steps of:

(a)—heating the interior of at least the second drying chamber to raise the temperature of timber placed therein;

(b)—evacuating said second chamber with said vacuum pump and extracting the heat from the air and water vapour drawn therefrom by means of said heat exchanger and transferring this heat into said first chamber;

(c)—placing said first and second chambers into communication with one another through said conduit means and



isolated from the atmosphere so that the pressures therein are equalised at a subatmospheric pressure;

(d)—evacuating said first chamber with said vacuum pump, extracting the heat contained in the air and water vapour drawn therefrom by means of said heat exchanger and transferring this heat into the second chamber; and

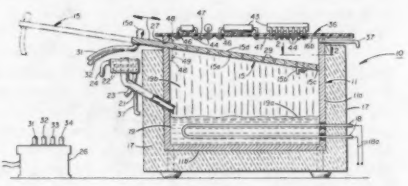
(e)—repeating steps (b), (c), and (d) cyclically in this sequence until the moisture content of the timber in the two chambers has fallen to the required level.

4,194,297

METHOD AND APPARATUS FOR GENERATING A CONTROLLABLY EXPOSED VAPOR BODY FOR HEATING ARTICLES

Robert C. Pfahl, Jr., Hanover Township, Northampton County, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,305
Int. Cl.² F26B 7/00; F27B 5/04
U.S. Cl. 34—26 **24 Claims**



20. A method of performing a heating operation at an elevated temperature on only a selected underside surface of an article, comprising the steps of:

boiling a heat transfer liquid substantially at atmospheric pressure to form an initially co-extensive body of hot condensible vapor of the heat transfer liquid at the elevated temperature, while being permanently confined with respect to base and side boundaries;

positioning an article to at least in part define a first elevated boundary such that only the selected underside surface of the article is exposed to, and heated by, the vapor, while the article at the same time, at least in part, facilitates the confinement of the initially co-extensive vapor body below said first elevated boundary, and within said base and side boundaries, so as to minimize any loss of rising vapor to the atmosphere.

isolating each positioned article from at least the major portion of the initially co-extensive vapor body, said isolating step occurring at a second vapor-confining elevated boundary located closely adjacent, but below, said first elevated boundary, and after the completion of a vapor-condensation-induced heating operation on the article, but prior to the removal of the heated article from its first elevated boundary-defining position, and

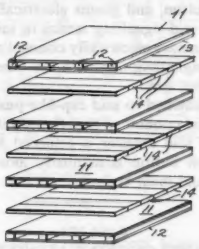
cooling while confining at least substantially all of any minor portion of the initially co-extensive vapor body that may become entrapped between the first and second elevated vapor-confining boundaries, prior to the removal of the heated article from its first boundary-defining position, with any resulting vapor-entrapped condensate being directed back to the lower most region of the then confined major portion thereof for re-boiling and re-use as part of another single, co-extensive vapor body.

4,194,298

AIR DRYING OF REFRACTORY HARDWOODS

C. Arthur Hart, Raleigh, N.C., assignor to Research Triangle Institute, N.C.

Filed Jun. 2, 1978, Ser. No. 911,753
Int. Cl.[2] F26B *19/00*
U.S. Cl. 34—94 **4 Claims**



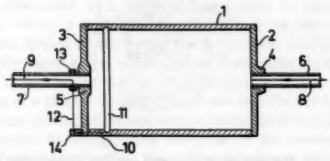
1. A stack of boards of refractory hardwoods and pallets consisting of a plurality of single layers of boards of refractory hardwoods alternating with pallets, each integral pallet consisting of two facing sheets of plywood with spacing means for spacing said facing sheets of plywood apart a predetermined distance.

4,194,299

CONDENSATE DISCHARGING DEVICE

Karl V. Wiberg, deceased, late of Sundsvall, Sweden, and Anna-Britta Wiberg, legal representative, Goteborg, Sweden, assignors to SCA Development Aktiebolag, Sweden

Filed Apr. 11, 1978, Ser. No. 895,353
Int. Cl.[2] F28F *5/02*
U.S. Cl. 34—124 **6 Claims**



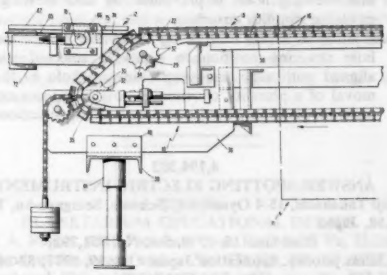
1. Apparatus for drying web materials comprising a cylindrical drum including a tubular jacket and a pair of end walls, means for supplying steam under pressure to the interior of said drum, condensate removal means for removing condensed steam formed within said drum, said condensate removal means comprising passage means extending axially within a portion of said tubular jacket and through one of said end walls, so that said condensate is removed from said drum at a point on the outer periphery of said drum formed by said tubular jacket, condensate collection means communicating with said passage means, said condensate collection means comprising groove means extending circumferentially about the inner surface of said tubular jacket for collecting said condensed steam formed within said drum and supplying said condensed steam to said passage means, throttle means communicating with said passage means exterior to said end wall, said throttle means being mounted on said drum at said outer periphery thereof, vacuum condensing means for condensing steam carried by said condensate, said condensing being carried out under reduced pressure, and discharge conduit means connecting said throttle means to said vacuum condensing means, said throttle means adapted to provide a pressure drop between said passage means and said discharge conduit so that the amount of steam carried by said condensate is limited to an amount of less than about 5 weight percent.

4,194,300

APPARATUS FOR HANDLING CREME FILLED SANDWICH COOKIES

George G. Swanson, Matawan, N.J.; Robert E. Strom, Hartsdale, N.Y., and Philip Jansen, N. Caldwell, N.J., assignors to Nabisco, Inc., East Hanover, N.J.

Filed Feb. 21, 1978, Ser. No. 879,087
Int. Cl.[2] F25D *25/04*
U.S. Cl. 34—217 **8 Claims**



1. In a system for manufacturing round sandwich type comestible articles having rigid base cakes separated by a layer of filling material that is applied in a flowable state and subsequently hardens, apparatus for handling the articles during the hardening period while they pass through a cooling zone which comprises an endless segmented conveyor extending horizontally through said cooling zone for transporting horizontal columns of articles through said zone, said conveyor being formed of a plurality of pivotally interconnected segments, each segment having a bottom wall and a pair of sidewalls forming a portion of a continuous trough extending longitudinally of the conveyor, said side walls being divergent extending upwardly and outwardly from said bottom wall to tangentially engage the edges of the base cakes, said side walls of said segments being arranged to support the articles above the bottom wall of said segments, means for placing articles on said conveyor at one end thereof, and means for removing the articles from the conveyor at the other end thereof.

an elongated member formed of first and second elongated bodies having a slot running along its longitudinal extension, said member having a generally rectangular cross-sectional shape with part of one side open to the slot so as to form two opposed longitudinal ridges, one each of the two opposed ridges being located on a separate one of the first and second bodies, said slot being dimensioned such that the ruler, at least between its folding joints, can be received in it, the ends of said member where the ruler extends being flat, one of said ends being at a 90° angle with the axis of said slot and the other being at some other angle less than 90°, said ends being designed such that a folding ruler inserted in said slot can be folded against one of the ends of the member so as to form an angle related to the angle between that end and the axis of the slot;

spring means for allowing the distance between the longitudinal ridges to be increased to such an extent that the ruler can be seated in the slot via the open side of the member, said spring means being at least one spring for holding the first and second bodies together so that the open side of the slot can be increased by exerting a force to expand said spring; and

at least one level located on said member at a predetermined angle with respect to the axis of said slot, whereby the ruler can be aligned with respect to a direction determined by the at least one level.

2. An attachment for a folding carpenter's ruler comprising:

an elongated member having a slot running along its longitudinal extension, said member having a generally rectangular cross-sectional shape with part of one side open to the slot so as to form at least one longitudinal ridge along the slot opening which faces another side wall of the slot, said slot being dimensioned such that the ruler, at least between its folding joints, can be received in it, the ends of said member where the ruler extends being flat, one of said ends being at a 90° angle with the axis of said slot and the other being at some other angle less than 90°, said ends being designed such that a folding ruler inserted in said slot can be folded against one of the ends of the member so as to form an angle related to the angle between that end and the axis of the slot;

spring means for allowing the slot opening to be increased to such an extent that the ruler can be seated in the slot via the open side of the member, said spring means being formed by a longitudinally bent band of spring material located in the slot along said another side wall of the slot so as to form a ridge opposing the at least one longitudinal ridge of the elongated member such that the open side of the slot can be increased by exerting a force to flatten the bend in said spring material; and

at least one level located on said member at a predetermined angle with respect to the axis of said slot, whereby the ruler can be aligned with respect to a direction determined by the at least one level.

4,194,296

VACUUM DRYING KILN

Vinceanzo Pagnozzi, Via Ponte Romano, Rocchetta di Cairo (Savona), and Ernesto G. Pagnozzi, Via Camponuovo, Loppa, Cairo Montenotte (Savona), both of Italy

Filed May 4, 1978, Ser. No. 902,632

Claims priority, application Italy, May 17, 1977, 68116 A/77

Int. Cl.² F26B 5/04

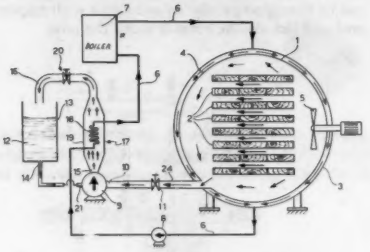
U.S. Cl. 34—16.5 **15 Claims**

12. A method of drying timber using a vacuum drying kiln having first and second drying chambers, heating means including a primary fluid operable to transfer heat to the interior of said chambers, a vacuum pump containing a secondary fluid and having an inlet and an outlet, means for selectively connecting the inlet to one of said chambers, a heat exchanger having a primary and secondary circuit and conduit means for selectively connecting said chambers directly to each other, comprising the steps of:

(a)—heating the interior of at least the second drying chamber to raise the temperature of timber placed therein;

(b)—evacuating said second chamber with said vacuum pump and extracting the heat from the air and water vapour drawn therefrom by means of said heat exchanger and transferring this heat into said first chamber;

(c)—placing said first and second chambers into communication with one another through said conduit means and



isolated from the atmosphere so that the pressures therein are equalised at a subatmospheric pressure;

(d)—evacuating said first chamber with said vacuum pump, extracting the heat contained in the air and water vapour drawn therefrom by means of said heat exchanger and transferring this heat into the second chamber; and

(e)—repeating steps (b), (c), and (d) cyclically in this sequence until the moisture content of the timber in the two chambers has fallen to the required level.

4,194,297

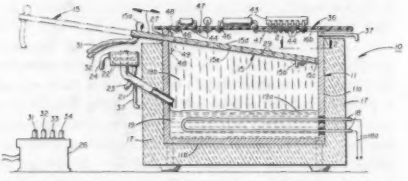
METHOD AND APPARATUS FOR GENERATING A CONTROLLABLY EXPOSED VAPOR BODY FOR HEATING ARTICLES

Robert C. Pfahl, Jr., Hanover Township, Northampton County, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,305

Int. Cl.² F26B 7/00; F27B 5/04

U.S. Cl. 34—26 **24 Claims**



20. A method of performing a heating operation at an elevated temperature on only a selected underside surface of an article, comprising the steps of:

boiling a heat transfer liquid substantially at atmospheric pressure to form an initially co-extensive body of hot condensible vapor of the heat transfer liquid at the elevated temperature, while being permanently confined with respect to base and side boundaries;

positioning an article to at least in part define a first elevated boundary such that only the selected underside surface of the article is exposed to, and heated by, the vapor, while the article at the same time, at least in part, facilitates the confinement of the initially co-extensive vapor body below said first elevated boundary, and within said base and side boundaries, so as to minimize any loss of rising vapor to the atmosphere.

isolating each positioned article from at least the major portion of the initially co-extensive vapor body, said isolating step occurring at a second vapor-confining elevated boundary located closely adjacent, but below, said first elevated boundary, and after the completion of a vapor-condensation-induced heating operation on the article, but prior to the removal of the heated article from its first elevated boundary-defining position, and

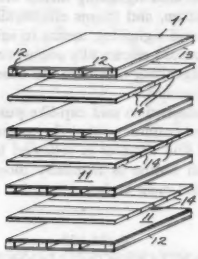
cooling while confining at least substantially all of any minor portion of the initially co-extensive vapor body that may become entrapped between the first and second elevated vapor-confining boundaries, prior to the removal of the heated article from its first boundary-defining position, with any resulting vapor-entrapped condensate being directed back to the lower most region of the then confined major portion thereof for re-boiling and re-use as part of another single, co-extensive vapor body.

4,194,298

AIR DRYING OF REFRACTORY HARDWOODS

C. Arthur Hart, Raleigh, N.C., assignor to Research Triangle Institute, N.C.

Filed Jun. 2, 1978, Ser. No. 911,753
Int. Cl.² F26B *19/00*
U.S. Cl. 34—94 **4 Claims**



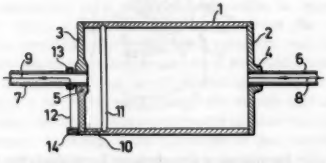
1. A stack of boards of refractory hardwoods and pallets consisting of a plurality of single layers of boards of refractory hardwoods alternating with pallets, each integral pallet consisting of two facing sheets of plywood with spacing means for spacing said facing sheets of plywood apart a predetermined distance.

4,194,299

CONDENSATE DISCHARGING DEVICE

Karl V. Wiberg, deceased, late of Sundsvall, Sweden, and Anna-Britta Wiberg, legal representative, Goteborg, Sweden, assignors to SCA Development Aktiebolag, Sweden

Filed Apr. 11, 1978, Ser. No. 895,353
Int. Cl.² F28F *5/02*
U.S. Cl. 34—124 **6 Claims**



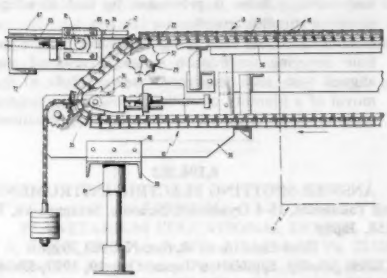
1. Apparatus for drying web materials comprising a cylindrical drum including a tubular jacket and a pair of end walls, means for supplying steam under pressure to the interior of said drum, condensate removal means for removing condensed steam formed within said drum, said condensate removal means comprising passage means extending axially within a portion of said tubular jacket and through one of said end walls, so that said condensate is removed from said drum at a point on the outer periphery of said drum formed by said tubular jacket, condensate collection means communicating with said passage means, said condensate collection means comprising groove means extending circumferentially about the inner surface of said tubular jacket for collecting said condensed steam formed within said drum and supplying said condensed steam to said passage means, throttle means communicating with said passage means exterior to said end wall, said throttle means being mounted on said drum at said outer periphery thereof, vacuum condensing means for condensing steam carried by said condensate, said condensing being carried out under reduced pressure, and discharge conduit means connecting said throttle means to said vacuum condensing means, said throttle means adapted to provide a pressure drop between said passage means and said discharge conduit so that the amount of steam carried by said condensate is limited to an amount of less than about 5 weight percent.

4,194,300

APPARATUS FOR HANDLING CREME FILLED SANDWICH COOKIES

George G. Swanson, Matawan, N.J.; Robert E. Strom, Hartsdale, N.Y., and Philip Jansen, N. Caldwell, N.J., assignors to Nabisco, Inc., East Hanover, N.J.

Filed Feb. 21, 1978, Ser. No. 879,087
Int. Cl.² F25D *25/04*
U.S. Cl. 34—217 **8 Claims**



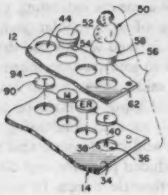
1. In a system for manufacturing round sandwich type comestible articles having rigid base cakes separated by a layer of filling material that is applied in a flowable state and subsequently hardens, apparatus for handling the articles during the hardening period while they pass through a cooling zone which comprises an endless segmented conveyor extending horizontally through said cooling zone for transporting horizontal columns of articles through said zone, said conveyor being formed of a plurality of pivotally interconnected segments, each segment having a bottom wall and a pair of sidewalls forming a portion of a continuous trough extending longitudinally of the conveyor, said side walls being divergent extending upwardly and outwardly from said bottom wall to tangentially engage the edges of the base cakes, said side walls of said segments being arranged to support the articles above the bottom wall of said segments, means for placing articles on said conveyor at one end thereof, and means for removing the articles from the conveyor at the other end thereof.

4,194,301

DEVICE FOR USE IN PAIRED ASSOCIATE LEARNING

Edward C. Caldwell, Box 147 - Rte. 7, Morgantown, W. Va. 26505

Filed May 10, 1978, Ser. No. 904,540
Int. Cl.[2] G09B *1/06*
U.S. Cl. 35—9 R **10 Claims**



1. An educational device for use in paired associate learning situations, comprising:

a base;

a top sheet having a plurality of viewing holes defined therein and being removably positioned on said base, said base having a plurality of blind holes defined therein to be aligned with said top sheet viewing holes;

a plurality of stimulus discs removably held in said base blind holes, said stimulus discs including selected stimuli located thereon to be aligned with individual viewing holes of said plurality of viewing holes and visible through said individual holes, said selected stimuli on said stimulus discs each including one of a plurality of associated components, a component on one disc being combinable with a component on another disc to form a selected unit used with teaching techniques involved in paired associate learning situations; and

a plurality of stimulus covers releasably mounted on said top sheet to cover said viewing holes and prevent viewing therethrough so that viewing of said selected stimuli via said viewing holes is prevented by said viewing hole covering stimulus covers,

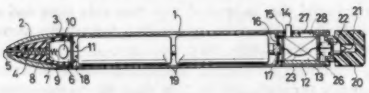
said stimulus covers each being removable from a viewing hole covering position to expose a selected stimulus aligned with such uncovered viewing hole so that removal of a plurality of stimulus covers exposes components involved in paired associate learning situations.

4,194,302

ANSWER-SPOTTING ELECTRIC INSTRUMENT

Kenji Takahashi, 15-4 Oyamadai, 2-chome, Setagaya-ku, Tokyo 158, Japan

Filed Oct. 16, 1978, Ser. No. 951,792
Claims priority, application Japan, Oct. 19, 1977, 52-140290
Int. Cl.[2] G09B *7/06*
U.S. Cl. 35—9 C **6 Claims**



1. An answer-spotting electric instrument, comprising:

an elongated cylindrical main body having a hollow substantially conical tip cover at its forward longitudinal end porton, a longitudinal mid-portion and a rearward longitudinal end portion, said main body having an annular electrically conductive contact surface at the outer end of said tip cover, said main body having substantially the shape of a writing pen, said rearward longitudinal end portion of said body having sidewardly opening first and second apertures therethrough;

a sleeve made of electrically insulative material disposed inside said tip cover;

an elongated electrically conductive probe longitudinally slidably received in said sleeve so that said probe is electrically insulated from said main body, the outer end of said probe being extendable through the central opening of said annular contact surface and being radially spaced therefrom;

spring means for resiliently urging said probe outwardly from said main body;

battery means disposed inside said main body in said longitudinal mid-portion of said main body;

means electrically connecting one terminal of said battery means to said probe;

a number counter coaxially disposed inside said main body in said rearward longitudinal end portion thereof, said counter having a laterally movable, manually operable, actuating button projecting sidewardly through said first aperture in said main body and outwardly from said main body whereby said counter can be manually actuated to count numbers by depressing said actuating button, said counter having a counted number indicator laterally aligned with said second aperture so that the counted number can be viewed through said second aperture;

a cap-like push button longitudinally slidably mounted on the rearward longitudinal end of said main body;

electrically operated signalling means mounted in said cap-like push button, and means electrically connecting one terminal of said signalling means to said annular contact surface and means electrically connecting the other terminal of said signalling means to the other terminal of said battery means; and

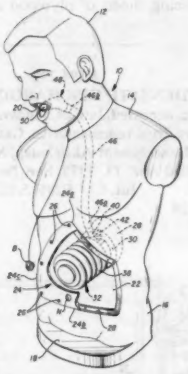
a reset lever attached to said cap-like push button and connected to said counter so that the counted number on the indicator of said counter is returned to zero when said cap-like push button is manually moved longitudinally relative to said main body.

4,194,303

ANTI-CHOKING MANIKIN

Robert D. Heller, Green Bay, Wis., assignor to Medical Plastics Laboratory, Inc., Gatesville, Tex.

Filed Jun. 2, 1978, Ser. No. 912,099
Int. Cl.[2] G09B *23/30*
U.S. Cl. 35—17 **12 Claims**



1. A device for teaching a technique for dislodging foreign matter from the throat of a choking victim comprising: a simulated human torso having a hollow abdominal cavity, the front abdominal area of the torso being flexible such that the front abdominal area may be pushed inwardly, said torso having an opening formed in the area of the mouth; pump means, said

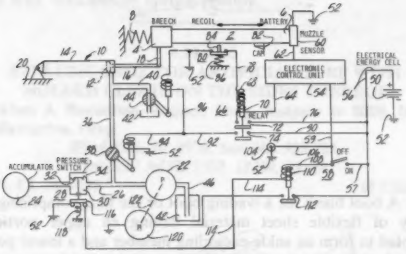
pump means having an outlet and an inlet; a tubular passageway communicating between the outlet of said pump and the opening in said torso in the area of the mouth; means flexibly securing said pump means in said abdominal cavity at an angle relative to the front abdominal area such that when the flexible front abdominal area is pushed inwardly and upwardly said pump means is actuated to pump fluid through the outlet and through the passageway to disloge foreign matter from said passageway and when the front abdominal area is thrust inwardly only and substantially perpendicular to the front abdominal area, said pump means slides away from said thrust to prevent air from being exhausted from said passageway.

4,194,304

LOADER AND RECOIL SIMULATION TRAINER FOR ARTILLERY CREWS

Lyle A. Wolcott, East Detroit, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1978, Ser. No. 957,121
Int. Cl.[2] G09B 9/00; F41F 27/00
U.S. Cl. 35—25 **6 Claims**



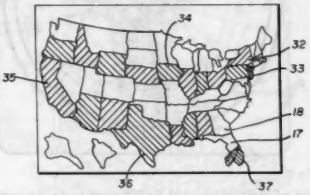
1. A loader-trainer for an artillery piece having a barrel mounted to reciprocate between its firing position and its fully recoiled position, and means to move the barrel through recoil and counterrecoil including an expansible chamber device reciprocable through a two-stroke cycle and a spring connected to store energy by elastic deformation through one of the strokes of said cycle and to return the stored energy to move the barrel through the other stroke of the two-stroke cycle, the invention comprising: an electrical energy cell; a source of fluid under pressure including a pump and an accumulator; an electric motor connected to drive the pump; a normally closed electric switch responsive to pressure in the accumulator and openable when accumulator pressure reaches a predetermined maximum; a normally open solenoid-operated power switch for the electric motor and actuable into closed-circuit position by energization of its solenoid; an operating circuit comprising a series connection of the energy cell, the solenoid of said power switch, and said pressure-responsive switch; a hydraulic connection from the accumulator to the expansible chamber device and including a normally closed valve connected to a solenoid energizable to open its connected valve; a hydraulic connection from the expansible chamber device to the pump via a reservoir and including a normally open valve connected to a solenoid energizable to close its connected valve; an electrical sensor to sense the passing of a projectile out through the muzzle end of the artillery piece; electrical means connected to receive a signal from said sensor, to energize the solenoids of the normally closed valve and the normally open valve to actuate the expansible chamber device for movement of the barrel from its firing position into its fully recoiled position; a normally closed recoil-opened switch in the electrical means and openable to deenergize the solenoids of the normally closed valve and the normally open valve; and means actuable by barrel movement to the fully recoiled position to open the normally closed recoil-opened switch in said electrical means.

4,194,305

ARTICULATED TRAVEL AND EDUCATIONAL MAP WITH PEEL-OFF DIVISIONS

Douglas J. Smith, 2029 Mt. Carmel Blvd., Toms River, N.J. 08753, and Irving L. Kutno, 15 Carol Pl., Freehold, N.J. 07728

Filed Apr. 3, 1978, Ser. No. 893,007
Int. Cl.[2] G09B 29/00
U.S. Cl. 35—42 **4 Claims**



1. A geographical display device comprising a first map imprinted on the upper side of a first, base layer;

a second map, identical in size and shape to said first map, imprinted on the upper side of a second, upper layer, said second layer having a pressure-sensitive backing on its lower side;

said second map being superimposed on said first map and held in place, along with said second layer, by said pressure-sensitive backing, against said first layer;

said second map being articulated along certain boundaries of the land of said second map, so that portions of said second layer and said second map, defined by said certain boundaries, can be pulled off said first layer to reveal the corresponding portions of said first map; and

means for holding said geographical display device in a desired position.

4,194,306

PLANETARIUM EDUCATIONAL DEVICE

Scott A. Rogers, 6510 Patterson Ave., Richmond, Va. 23226

Continuation-in-part of Ser. No. 772,229, Feb. 25, 1977, abandoned. This application Mar. 3, 1978, Ser. No. 883,289
Int. Cl.[2] G09B 27/00
U.S. Cl. 35—44 **18 Claims**

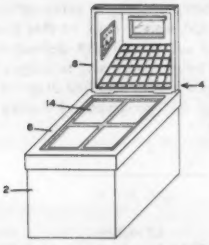
1. In an educational planetarium apparatus including a primary board acting as a support for the apparatus and having a plurality of groups of primary indicia thereon, a secondary board dimensionally smaller than said primary board, said secondary board rotatably mounted on said primary board and having a plurality of groups of secondary indicia thereon, said primary and secondary boards each having a first group of indicia which cooperatively show worldwide time zones,

said primary board including a second group of indicia comprising a plurality of markings each aligned with said first group of indicia on said first board, said plurality of markings on said primary board having first and second colored areas depicting respectively the particular day existing in the world, said first group of indicia on said secondary board including a representation of the International Date Line, said second board including means de-

fining a first opening positioned on the International Date Line for successively showing each one of said second

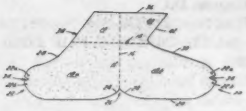
group of indicia on said first board as said second board is rotated.

4,194,307
SAMPLE DISPLAY DEVICE
Ellis P. Payne, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Sep. 18, 1978, Ser. No. 942,985
Int. Cl.[2] G09B *25/00*
U.S. Cl. 35—49 **3 Claims**



1. A display device comprising:
(a) a horizontal base member:
(1) said base member having a planar surface means;
(2) a ridge extending around and upward from the top surface of the planar surface means to form a pocket means to receive merchandise for display, said pocket means being sized to receive said merchandise with its edges abutting the sides of the ridge and being below the top of the ridge;
(3) a flange extending around and downward from the bottom surface of the planar surface means to form a second pocket means to hold the base member in position, said second pocket means being sized to receive the outer size dimensions of a shipping carton capable of holding a stack of said merchandise, one piece of which is to be displayed;
(b) and a vertical display member:
(1) said display member being affixed to one edge of said base member and being perpendicular thereto; and
(2) said display member having means to receive a sheet of paper containing descriptive information about said merchandise.

4,194,308
BOOT BLANK
Ulf R. Karlsson, Borås, Sweden, assignor to L-LT-Produkter, Borås, Sweden
Filed May 18, 1978, Ser. No. 906,928
Claims priority, application Sweden, Jun. 15, 1977, 7706894
Int. Cl.[2] A43B *1/02*
U.S. Cl. 36—9 R **10 Claims**

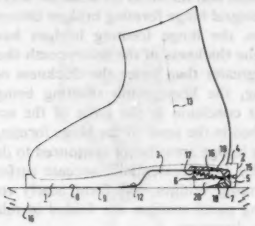


1. A boot blank for a wading boot or the like, comprising a body of flexible sheet material having an upper portion adapted to form an ankle-encircling member and a lower portion adapted to form a foot-encircling member, said upper and lower portions being adapted to be joined together to form a unitary body, said lower portion comprising a pair of side members each having a planar central portion meeting together along a central fold line for said boot blank, a substantially linear bottom margin, each bottom margin having a rounded shoulder proximate to said central fold line and together, said rounded shoulder of each portion forming an inwardly extending lower recess at said central fold line, said side members each having a rounded lateral side portion with an inwardly extending tapering side meeting said upper portion, said upper portion having a generally linear top margin with a pair of side portions, one of said side portions having an outwardly tapering side portion meeting one of said inwardly tapering side shoulders of said lower portion in an obtuse relationship, said upper portion having a triangularly shaped tab on the side opposed to said last-mentioned side, said triangularly shaped tab having an inwardly tapering side wall meeting said inwardly tapering side portion of said lower member in an acute angular relationship.

4,194,309
SKI BOOT
Hermann Kastinger, A 4863 Seewalchen, Austria
Continuation-in-part of Ser. No. 865,231, Dec. 27, 1977, abandoned. This application Nov. 15, 1978, Ser. No. 961,002
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—117 **22 Claims**

1. A ski boot having a sole and a leg sheath with a forwardly inclined axis and with the boot being comprised of a relatively rigid material, a boot heel mounted on said sole and having upper and lower heel parts, a lower heel part socket positioned forwardly of said heel, a hinge connecting said upper and lower heel parts in hinged assembly together, the lower heel part being operable to function to provide a support for the upper heel part when the ski boot is in a first standing position

and with the upper heel part then being in overlying relation to the lower heel part, the lower heel part being swingable on said hinge to a position to one side of said lower heel part and into said socket, thus exposing the upper heel part, the upper heel



part being so sized with respect to said sole and said lower heel part enabling it to then function to engage ground when said boot is in a second more upright standing position whereby the inclined axis of the leg sheath is moved so that the boot wearer can walk with a more upright posture.

4,194,310

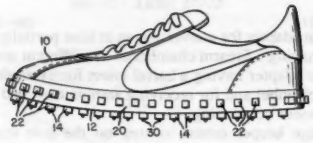
ATHLETIC SHOE FOR ARTIFICIAL TURF WITH MOLDED CLEATS ON THE SIDES THEREOF

William J. Bowerman, Eugene, Oreg., assignor to BRS, Inc., Beaverton, Oreg.

Filed Oct. 30, 1978, Ser. No. 955,784

Int. Cl.[2] A43B *5/02, 13/04, 23/28*

U.S. Cl. 36—128 **15 Claims**



1. An athletic shoe comprising:

a shoe upper,

a shoe sole attached to said shoe upper;

said shoe sole including an outer sole layer of resilient material having a plurality of first cleats molded integral with said outer sole layer, said first cleats being spaced laterally and longitudinally along said sole, and positioned beneath the foot of the wearer; and

a cover strip of resilient material of less thickness than said outer sole layer adhered to the shoe upper, said cover strip extending partially over the outer surface of said shoe upper around the toe portion and along the opposite sides of the shoe upper and having a plurality of second cleats molded integral with said cover strip on the opposite sides of said shoe upper.

4,194,311

GRAVE DIGGING APPARATUS

Jimmy Thames, 316 South St., Manning, S.C. 29102

Filed Jan. 17, 1978, Ser. No. 870,057

Int. Cl.[2] E02F *3/08, 5/06*

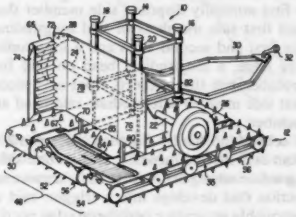
U.S. Cl. 37—192 A **12 Claims**

1. An apparatus for excavating a grave of a predetermined depth comprising:

a support frame having a plurality of ground engaging wheels, said frame being selectively positionable at a gravesite and including a plurality of members selectively positioned with respect to the gravesite so as to engage the surface of the ground at a plurality of locations about the gravesite to thereby resist movement of the frame relative to said gravesite; and,

an excavation assembly for excavating earth at the gravesite, said excavation assembly being carried by said support frame and being selectively movable relative to the support frame in a vertical direction below the surface of the ground to the predetermined depth of the grave to be excavated but restrained from movement in a horizontal direction relative to the support frame, said excavation assembly including:

an articulated first endless conveyor means bearing a plurality of digging implements and configured in a horizontally elongated loop having a vertical height substantially less than the predetermined depth of the grave to be excavated for removing earth beneath the excavation assembly, the loop having a dimension in the



direction of elongation approximately that of the length of the grave being excavated, and said first endless conveyor having a width approximately that of the width of the grave, so that the grave may be excavated in a single downward movement of the excavation assembly,

second endless conveyor means for collecting the earth excavated by said digging implements and for transporting the excavated earth, third endless conveyor means engaged to said excavation assembly for receiving the excavated earth from said second means and for vertically transporting the excavated earth received from said second conveyor means above the surface of the ground and away from the gravesite, and,

a motor carried by said excavation assembly for driving said conveyors along their endless paths.

4,194,312

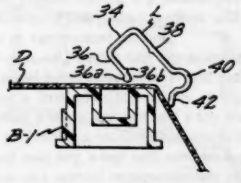
NEEDLEPOINT SUPPORTING FRAME AND CLIP ASSEMBLY

Dorothy Connors, Orange; Robert D. Chapman, Mission Viejo; Robert J. Winkler, and Timothy K. Winkler, both of Santa Ana, all of Calif., assignors to Alpha Nova Engineering, Inc., Santa Ana, Calif.

Filed Dec. 4, 1978, Ser. No. 966,053

Int. Cl.[2] D06C *3/08;* **A44B** *21/00;* **B44D** *3/18*

U.S. Cl. 38—102.5 **7 Claims**



3. In combination with a hollow frame defined by four elongate connected members that are normally disposed to one

another at their connections, a plurality of clips for removably engaging said members and a sheet of pliable material to hold the latter positively in a taut position on said frame, each of said members having first and second ends, and a longitudinal portion of each of said members intermediate said first and second ends having a transverse cross-section defined by an elongate web that has first and second parallel flanges projecting from first and second longitudinal edges thereof, a lip that extends outwardly from a free longitudinal edge of said second flange, a longitudinal recess in said web intermediate said first and second edges thereof that is defined by first and second laterally spaced side walls that project from said web in the same direction as said first and second flanges and a cross piece that extends between said first and second side walls a substantial distance from said web, and each of said clips being formed from a rectangular sheet of a resilient material that has been shaped to define:

a. a longitudinal member that has first and second parallel side member;

b. a first normally disposed side member that extends from said first side members of said longitudinal member and has first and second sides and a longitudinally extending free edge, a longitudinal bead on said free edge, and a protuberance that projects from said second side of said first side member intermediate said bead and longitudinal member; and

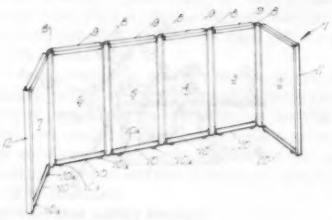
c. a second normally disposed side member that extends from said second member, said second side member having a free edge portion that has a transverse semi-circular section that develops into a trigger, said clip capable of removably securing a peripheral edge portion of said sheet to said frame when said peripheral edge portion of said sheet is positioned to extend over said recess and project downwardly beyond said lip on said second flange, said peripheral edge portion being secured to said frame when said clip is moved towards said frame to force a first section of said peripheral edge portion of said sheet into said recess to be frictionally gripped between said bead and cross piece and between said protuberance and second side wall and a second section of said material to be frictionally gripped between said second flange and second side member and between said lip and said semi circular section of said free edge portion of said second side member, and said peripheral edge portion of said sheet being released from said frame when said trigger is manually engaged and used to pivot said clip transversely relative to said elongate member to a position where said semi-circular section and second side member are separated from said lip and second flange and said first side wall and bead may be lifted from said recess.

4,194,313

ARTICULATED PANEL DISPLAY

Jack G. Downing, Cincinnati, Ohio, assignor to Downing Displays, Inc., Cincinnati, Ohio

Filed Jun. 19, 1978, Ser. No. 916,934
Int. Cl.[2] E04B 2/74; G09F 15/00
U.S. Cl. 40—610 **3 Claims**



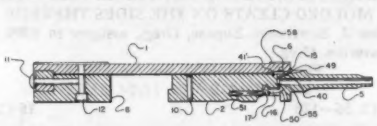
1. An articulated panel display comprising a plurality of panels hingedly connected together in side-by-side relation, said display being formed from a single length of honeycomb sheeting covered on its opposite surfaces with a flexible facing material, the opposite surfaces of the covered honeycomb sheeting being scored by spaced apart mating pairs of score lines, the areas between adjacent pairs of the score lines defining panel sections and the areas between the score lines in each air defining integral hinge forming bridges interconnecting the panel sections, the hinge forming bridges having a width greater than the thickness of the honeycomb sheeting but not substantially greater than twice the thickness of said honeycomb sheeting, the honeycomb sheeting being crushed to essentially flat condition in the areas of the score lines and partially crushed in the areas of the hinge forming bridges, the hinge forming bridge areas being contoured to define back-to-back outwardly facing essentially arcuate surfaces, whereby the hinge forming bridges will form neatly rounded edges when adjoining panel sections are folded in relation to each other in either direction.

4,194,314

EJECTOR ASSEMBLY FOR A FIREARM ADAPTER

John P. Foote, Marietta, Ga., assignor to U.S. Armament Corporation, Gretna, La.

Division of Ser. No. 627,743, Oct. 31, 1975, Pat. No. 4,098,016.
This application Feb. 25, 1977, Ser. No. 771,989
Int. Cl.[2] F41C 15/00
U.S. Cl. 42—25 **5 Claims**



1. In an adapter for converting an at least partially automatic firearm having a firearm chamber to use different size ammunitions, the adapter having a barrel insert for extending into the firearm chamber and for receiving ammunition, and a bolt, the improvement comprising:

cartridge keeper means located on the bolt for applying pressure to the rim of the case of ammunition positioned in the barrel insert, said cartridge keeper means being made of thin resilient spring material; and

mounting means for mounting said cartridge keeper means on the bolt, said mounting means including an inverted U-shaped portion integrally formed of the same material with said cartridge keeper means and having a first and a second leg, the top of the inverted U-shaped portion of said mounting means extending along the top of the bolt and the first leg of the U-shaped portion which integrally connects with said cartridge keeper means extending alongside of the bolt, both the top and the first leg being exposed to the exterior of the bolt along their full length, said cartridge keeper means extending forwardly of said first leg.

4,194,315

RETRACTABLE FISH STRINGER

Michael G. Martin, Box 142; Ronald M. Carver, 405 S. Jefferson, and James E. Cafer, 210 S. Main, all of Vandalia, Mo. 63382

Filed Jun. 22, 1978, Ser. No. 917,796
Int. Cl.[2] A01K 65/00
U.S. Cl. 43—55 **10 Claims**

1. A fish stringer comprising:

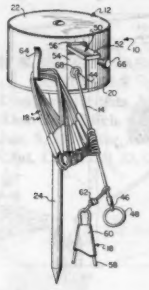
a rotatable spool;

a length of flexible line having a portion thereof normally wound about said spool and being selectively extensible from said spool;

a plurality of fish-holding elements each including

a line-engaging portion for securing the element to said line and for allowing the element to slide freely along the entire length of said line from the outermost end thereof to said spool; and

an elongated, relatively flat fish-holding portion coupled to said line-engaging portion,



said plurality of fish-holding elements being cooperatively configured and arranged for compact, side-by side abutment of said fish-holding portions during storage of the elements when the latter are not in use.

4,194,316

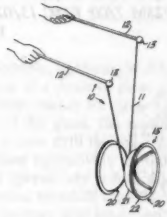
SELF BALANCING DIABOLO TOP WITH ATTACHMENT FOR VERTICAL SPINNING

Walter L. Jordon, 10443 SW. 185 Ter., Miami, Fla. 33157

Filed Aug. 25, 1978, Ser. No. 936,934

Int. Cl.[2] A63H *27/12*

U.S. Cl. 46—60 **11 Claims**



1. A spinner for a string manipulated diabolo toy having characteristics for self balancing on the string preparatory to spinning, comprising bowl-shaped halves having smooth convex exterior wall surfaces defining a medial relatively deep annular groove therebetween for engaging said string therein, said groove having a bottom along which said string engagingly extends and sidwalls formed by said convex exterior wall surfaces, said groove sidewalls being in relative close proximity to each other along a substantial radial distance from the bottom of the groove to engage said string and limit the angle of tilt of said spinner when at rest as said self balancing characteristic.

4,194,317

REMOTELY CONTROLLED AIRCRAFT

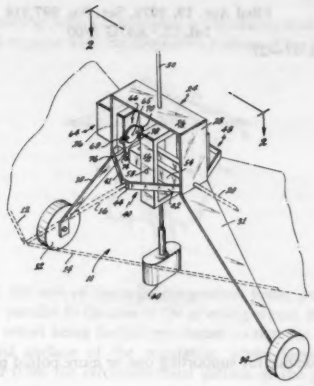
Al J. Kidd, 5436 W. Washington Blvd., Los Angeles, Calif. 90016

Filed Apr. 3, 1978, Ser. No. 892,991

Int. Cl.[2] A63H *27/02*

U.S. Cl. 46—76 R **7 Claims**

1. In a model aircraft, in combination, a wing structure, an adjustable control mass carried by the wing structure, supporting means for the control mass, said supporting means including mechanism whereby the control mass can be shifted laterally or can be shifted fore and aft and means responsive to



remote radio signals during flight for causing the control means to be shifted laterally or shifted fore and aft for guiding the aircraft, the aircraft being free of ground connections thereto.

4,194,318

TOY AMBULANCE UNIT

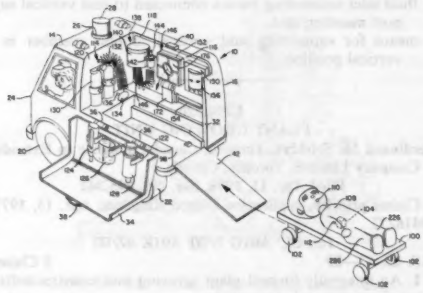
Saburo Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,867

Claims priority, application Japan, Dec. 17, 1977, 52-170804[U]

Int. Cl.[2] A63H *11/10*

U.S. Cl. 46—202 **11 Claims**



1. A toy ambulance unit for use with a doll, comprising:

a toy ambulance vehicle having a a patient portion, a side door giving access to said patient portion, and a rear door giving access to said patient portion;

a medical panel mounted within said toy ambulance vehicle, said medical panel being accessible to said patient portion and providing a first plurality of toy medical devices, including at least a toy x-ray unit and a toy medical oscilloscope, said toy medical oscilloscope comprising a rotatable drum and said toy x-ray unit comprising means for displaying first and second representations of x-rays; and

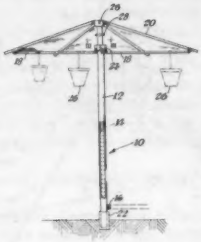
means for mounting a second plurality of toy medical devices on said side door so that said toy medical devices are enclosed within said patient portion when said side door is closed.

4,194,319

POTTED PLANT SUPPORT

Carroll O. Crawford, 14963-19th St., North, Loxahatchee, Fla. 33470

Filed Apr. 19, 1978, Ser. No. 897,914
Int. Cl.[2] A47G 7/00
U.S. Cl. 47—27 **3 Claims**



1. A device for supporting one or more potted plants, comprising:

a rigid elongated vertical support member, said support member having a hollowed central chamber for receiving a fluid;

at least one sprinkler nozzle connected to the upper portion of said vertical support member and in fluid communication with the central portion of the vertical support member chamber;

a plurality of upper frame members connected to the upper end of said vertical support member at one end and disposed radially from the upper end of said vertical support member;

a panel connected to said upper frame members;

a sleeve disposed around said vertical support member;

a plurality of horizontally disposed, radially disposed rigid support members connected at their inside ends to said vertical support member sleeve and at the outside ends to said upper support members;

fluid inlet connecting means connected to said vertical support member; and

means for supporting said vertical support member in a vertical position.

4,194,320

PLANT GROWING UNIT

Ferdinand M. Svirklys, Toronto, Canada, assignor to Extrados Company Limited, Toronto, Canada

Filed Apr. 11, 1978, Ser. No. 895,342
Claims priority, application United Kingdom, Apr. 13, 1977, 15416/77
Int. Cl.[2] A01G 9/00; A01K 67/00
U.S. Cl. 47—59 **5 Claims**

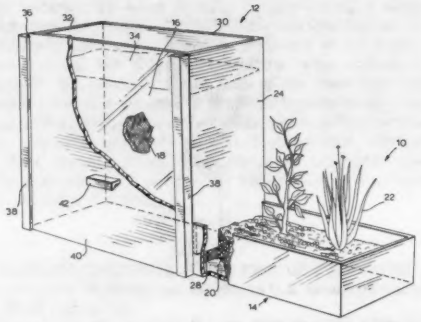
1. An integrally-formed plant growing unit constructed of transparent material, comprising

a soil container portion housing a bed of soil adapted to have earthworms living therein,

a hydroponic tray portion, containing gravel, joined to said soil container portion and adapted to have plants growing therein, and

means establishing a liquid flow communication between said bed of soil and the nutrient medium sustaining said plants,

said unit including an elongate bottom wall part of the length of which constitutes the bottom wall of said container portion and the remainder of the length of which constitutes the bottom wall of said tray portion, upstanding substantially parallel end walls one extending to a greater height than the other, said one wall constituting the end wall of said container portion and said other wall constituting the end wall of said tray portion, upstanding substantially parallel side walls, part of the length of which extend to the height of said one end wall and constitutes the side walls of said container portion and the remainder of the length of which extend to the height of said other end wall and constitute the side walls of said tray portion, and divider wall means separating said container portion from said tray portion and extending downwardly



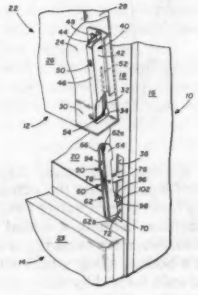
parallel to said end walls from the height of said one end wall to a location spaced from said bottom wall and below the height of said other end wall to define an unobstructed slot between the lower end of said divider wall means and said bottom wall constituting said means establishing fluid flow communication.

4,194,321

OVEN HINGE MECHANISM INCLUDING DETENT LOCK

Gerald W. Hess, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.

Filed Dec. 5, 1977, Ser. No. 857,614
Int. Cl.[2] E05D 7/10; F23M 7/00; F24C 15/02
U.S. Cl. 49—389 **19 Claims**



1. In a removable hinged door for an oven housing having an access opening to be covered by the door, the door movable through a plurality of positions between a substantially vertical closed position over the access opening and a substantially horizontal open position to provide access to the oven housing the combination comprising:

a hinge bracket pivotally secured to the oven housing;

a channel frame secured within the door for receiving said hinge bracket for rendering the door pivotally cooperative with said hinge bracket for movement between the door closed position and the door open position;

a lever secured to said hinge bracket for movement between first and second positions, such that in said first position said lever engages said channel frame to prevent removal

of the door from said hinge bracket, and in said second position said lever disengages from said channel frame to permit removal of the door from said hinge bracket and further maintains said hinge bracket in a predetermined fixed position with respect to the oven housing when the door is removed from said hinge bracket; and

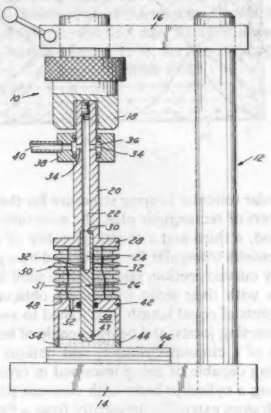
means extending from said lever for moving said lever between said first and second positions.

4,194,322

CONSTANT FORCE SHEET GLASS CUTTING DRILL ASSEMBLY

Dante S. Giardini, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 5, 1978, Ser. No. 912,902
Int. Cl.[2] B32B *35/00*
U.S. Cl. 51—81 R **14 Claims**



1. A portable, lightweight drill assembly for drilling through the surface of a piece of plate glass or the like, comprising, in combination, means for detachably mounting a drill motor or one side of the glass, the motor having a drill shaft mounted thereon, a core drill having a cutter face engageable with the glass, means operatively mounting the core drill on the drill shaft and operatively connecting the core drill to the shaft for simultaneous rotation together while permitting axial movement of the core drill relative to the shaft, fluid pressure means acting between the core drill and the shaft yieldably biasing the cutter face of the core drill against the glass surface whereby operation of the drill motor effects a simultaneous rotational and axial cutting movement of the core drill through the surface of the glass, the fluid pressure means including a source of fluid at variable pressure, and means maintaining a constant force on the core cutter face regardless of the change in pressure level of the fluid.

4,194,323

CENTERLESS GRINDER

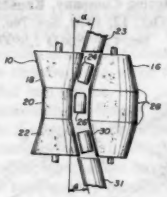
Edwin W. Blocker, Jr., Herndon, Va., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 30, 1978, Ser. No. 965,222
Int. Cl.[2] B24B *5/18*
U.S. Cl. 51—103 R **6 Claims**

1. An apparatus for grinding to a barrel shape, comprising:

a. a grinding wheel comprising a composite circumferential surface that includes a cylindrical surface, a first frustoconical surface joined at its smaller-radius edge to one edge of the cylindrical surface, and a second frustoconical surface joined at its smaller-radius edge to the other edge of the cylindrical surface, the radii of the smaller-radius edges of the frustoconical surfaces being equal to the radius of the cylindrical surfaces, the three surfaces thereby together forming a continuous composite surface; and

b. a regulating wheel comprising a circumferential surface shaped to mate with the composite surface of the grinding



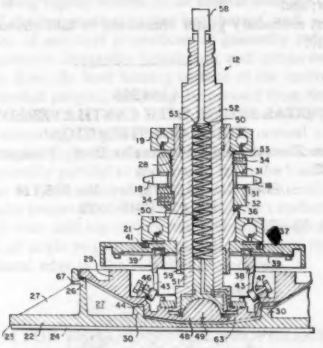
wheel, the axis of the regulating wheel being positioned nearly parallel to the axis of the grinding wheel, the regulating wheel being further positioned so that the circumferential surface of the regulating wheel faces but is spaced from the circumferential surface of the grinding wheel.

4,194,324

SEMICONDUCTOR WAFER POLISHING MACHINE AND WAFER CARRIER THEREFOR

Anthony C. Bonora, Atherton, and Karl Lorenz, Redwood City, both of Calif., assignors to Siltec Corporation, Menlo Park, Calif.

Filed Jan. 16, 1978, Ser. No. 869,652
Int. Cl.[2] B24B *29/00*
U.S. Cl. 51—131.5 **11 Claims**



1. A carrier for thin wafers to be treated comprising:

A. a rigid plate;

B. means on a first face of said plate to adhere thereto one or more wafers to be treated;

C. load bearing means on the side of said plate opposed to said first face to receive loading to press wafers mounted on said first face against a treating means; and

D. load distributing means on said side connecting said load bearing means with substantially the full area of said side opposed to that area of said first face to which wafers are to loading applied to said load bearing means is distributed over said full area;

E. said load bearing means comprising a flange projecting from said side generally centrally with respect to said full area and extending about a generally closed path thereon having a configuration generally the same as the configuration of the outer periphery of said full area, and said load distribution means includes a plurality of webs extending

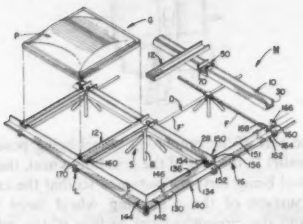
between said flange and said plate side both inwardly and outwardly of said generally closed path.

4,194,325

GUTTER SYSTEM FOR SKYLIGHTS OR THE LIKE

Stephen F. Chalpin, Jr., Overland Park, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Oct. 12, 1978, Ser. No. 950,709
Int. Cl.² E04D *13/00*
U.S. Cl. 52—14 **12 Claims**



1. A gutter system for use with skylights or the like comprising:

a supporting means having an elevating means and a platform on said elevating means;

a primary gutter supported on said platform, said primary gutter including a pair of spaced walls each wall having a notch defined therein;

a channel connector nested in said notches and attached to said primary gutter to extend essentially perpendicular thereto, said channel connector having a drain hole defined therein for conducting water into said primary gutter; and

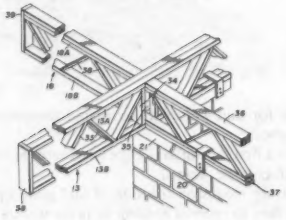
a first secondary gutter connected to said channel connector.

4,194,326

PEDESTAL HOUSE WITH CANTILEVERED CROSS TRUSS CONSTRUCTION

Bertram Zusman, 4112 Montecello Blvd., Youngstown, Ohio 44505

Filed Oct. 26, 1978, Ser. No. 955,124
Int. Cl.² F04B *1/34*
U.S. Cl. 52—73 **5 Claims**



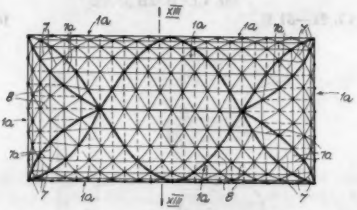
1. A pedestal house comprising an enclosure having a floor supporting structure and a foundation thereunder, said floor supporting structure consisting of a cantilevered crossed truss construction comprising several pairs of crossed horizontally disposed truss members, each member including vertically spaced top and bottom chord members and interconnecting web members, one of each pair of truss members being of a greater height than the other so that one truss member of each pair passes through an opening in the other, spacing members longitudinally of said other truss members so as to increase the height thereof to that of said higher truss members, a floor in said enclosure disposed on said crossed truss construction and outer and inner walls forming said enclosure positioned on said crossed truss construction and wherein the ends of said crossed trusses extend beyond said foundation to form cantilevered extensions supporting portions of said enclosure thereabove.

4,194,327

MODULAR RETICULAR BEARING STRUCTURE FOR DOMED SHELTERS

Giovanni Simone, via Bacchiglione 14, Milan, Italy

Filed Jan. 20, 1978, Ser. No. 871,331
Claims priority, application Italy, Jan. 21, 1977, 19512 A/77
Int. Cl.² E04B *1/32*
U.S. Cl. 52—86 **10 Claims**



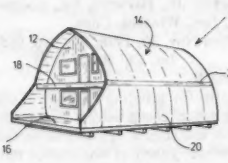
1. A modular reticular bearing structure for the formation of domed shelters of rectangular plan, the structure comprising a first, a second, a third and a fourth plurality of modular substantially isosceles triangular frames formed by a grid-like shell of outwardly curved section, said grid-like shell having polygonal meshes with their sides formed by oblique rigid strut-shaped elements of equal length, one joined to another at their ends by connecting joints, and being capable of being inscribed in a portion of a circular cylinder, said oblique strut-shaped elements being capable of being inscribed in crossed geodetic lines following a cylindric helix with constant pitch, said first plurality of frames extending upwardly from a first horizontal base line, said second plurality of frames and said third plurality of frames extending upwardly, respectively from second and third horizontal base lines which are parallel to one another, perpendicular to said first base line and extend from ends thereof, said fourth plurality of frames extending upwardly from a fourth base line which is parallel to said first base line, perpendicular to said second and third base lines and extends between other ends of said second and third base lines, fusiform areas being defined at respective corners of the structure between adjacent ones of said pluralities of frames.

4,194,328

BUILDING CONSTRUCTION

John R. Peirson, and Deane A. L. Lynch, both of Peterborough, Canada, assignors to J. R. Pierson Building Systems Limited, Peterborough, Canada

Filed Jan. 5, 1978, Ser. No. 867,286
Int. Cl.² E04B *1/32*
U.S. Cl. 52—86 **10 Claims**



1. In home building construction having rectangular floor

plan, combination sidewall and roof extending from the building base to building peak, a substantial portion of said combination sidewall and roof being curved with its lower portion bulging outwardly, the remaining portion of said combination sidewall and roof being inclined linearly upwardly from said substantial portion to define the building peak, said combination sidewall and roof being constructed of a plurality of spaced apart parallel laminated rafters which extend from building base to peak, said combination sidewall and roof providing internally of said home a continuous surface on which a sheet of air-vapor barrier extends from building base to top over insulation material positioned between said rafters, the connection between sheets of barrier material being essentially impervious to moisture laiden air to prevent movement of air from within said building to outside said building.

4,194,329

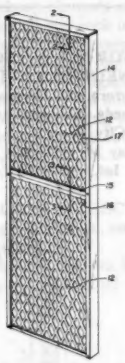
SOUND ABSORBING PANELS

Alan C. Wendt, 249 S., Poteet Barrington, Ill. 60010

Continuation of Ser. No. 650,633, Jan. 20, 1976, abandoned. This application Mar. 7, 1978, Ser. No. 884,447

Int. Cl.[2] E04B *1/82*

U.S. Cl. 52—145 **23 Claims**



1. A sound absorbing panel for use in industrial sound control, said panel comprising a sound absorbing material being mineral fiber having a density of from four to six pounds per cubic foot wherein said sound absorbing material is completely enclosed in a heat shrunk plastic material and supported by a frame having an integral U-shaped cross-section, said U-shaped frame opening inwardly with flanges of the U-shape extended inwardly of the sound absorbing material enclosed in the heat shrunk plastic material and said frame extending about the outer edge of the heat shrunk plastic material enclosing the sound absorbing material.

4,194,330

NAILABLE STEEL FLOOR CHANNEL WITH ANTI-SKID SURFACE

James T. Smith, Valparaiso, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1978, Ser. No. 873,074

Int. Cl.[2] E04F *11/16*

U.S. Cl. 52—177 **4 Claims**

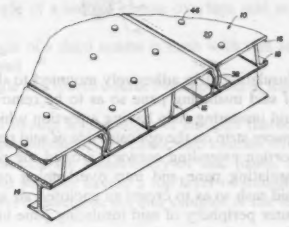
1. In a nailable steel floor construction including support means supporting a plurality of elongated substantially identical floor planking members, the planking members comprising,

a structural channel member roll formed from flat steel stock of substantially uniform thickness, the channel member having a central web defining a substantially flat load bearing surface and first and second downwardly depending flange members formed one on each side of the central web and each terminating at its lower edge in an inwardly turned ledge,

the first flange having a longitudinally extending outwardly concave corrugation formed thereon and the second flange having an outwardly convex corrugation which is substantially complementary to the concave corrugation on the first flange,

spacing means formed on at least one of the flanges at spaced intervals therealong for engaging the flange on an adjacent planking member in the floor construction to provide a nailing groove therebetween when the planking members are assembled into a floor,

an elongated substantially U-shaped reinforcing channel rigidly welded to the central web between the flanges and extending substantially the full length of the structural channel, the reinforcing channel having a base web disposed in a plane substantially parallel to the plane of the ledges on the first and second flanges and spaced slightly



therefrom in the direction of said central web and upwardly extending legs formed one on each side edge of the base web and terminating in parallel spaced edges, the free edges being rigidly welded to the central web one on each side of the longitudinal center line thereof, and

a plurality of anti-skid projections of generally cylindrical configuration integrally formed on and projecting outwardly from the load bearing surface of the central web, the anti-skid projections being die pressed from the material of the flat steel stock located in substantially parallel rows extending longitudinally of the structural channel, the anti-skid projections each having a top surface extending generally parallel to and spaced from the load bearing surface of the central web and side edges extending substantially perpendicular to the load support surface of the central web, said top surface and said side edges intersecting at an angle to provide an abrupt, relatively sharp top peripheral edge on the anti-skid projections.

4,194,331

SYSTEM FOR ENHANCING THE PROPERTIES OF WINDOWS AND THE LIKE

Alan R. Gingle, 5728 S. Blackstone, Apt. 308, Chicago, Ill. 60637, and Terrance D. Gingle, 1136 E. Cunningham Dr., Palatine, Ill. 60067

Filed Apr. 17, 1978, Ser. No. 897,229

Int. Cl.[2] E06B *3/64, 3/28*

U.S. Cl. 52—203 **10 Claims**

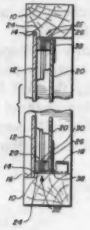
1. In combination:

a window having a sash and at least one fixed pane of flat translucent material surrounded by and fixedly mounted along its edges within said sash,

an insulating pane of flat, translucent material of approximately the same shape and of a size slightly smaller than the exposed surface of said fixed pane so that said insulating pane fits interior to said sash,

insulating strip means for holding said insulating pane to said fixedly mounted pane including a first insulating spacer strip means having one surface bonded to and along the periphery of said fixed pane and an oppositely facing selectively engageable surface and a second insulating

spacer strip means having one surface bonded to and along the periphery of said insulating pane and an oppositely facing selectively engageable surface which intermates with the engageable surface of said first spacer strip means to hold said insulating pane in spaced parallel relation to said fixed pane, said insulating spacer strip means being of material having a low thermal conductivity being sufficiently thick to create an air space between said panes,



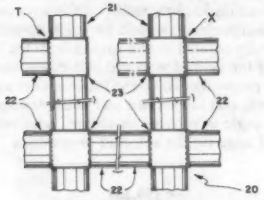
an insulating strip adhesively mounted to the outside edges of said insulating pane so as to be removable therewith, said insulating strip having a portion which overlaps said spacer strip on the opposite side of said pane and a flexible portion extending outward around the periphery of said insulating pane and into overlapping engagement with said sash so as to create an enclosed air space around the outer periphery of said insulating pane in addition to the air space between the panes.

4,194,332

ELECTRICAL WIRING DISTRIBUTION SYSTEM

Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Feb. 2, 1978, Ser. No. 874,537
Int. Cl.[2] E04B 5/48
U.S. Cl. 52—220 **14 Claims**



1. An electrical wiring distributing floor structure comprising:

a substructure presenting an upper surface;

an uninterrupted main unit supported on said upper surface and having opposite longitudinal edges, said main unit including alternating crests and valleys connected by webs and presenting at least one lengthwise trough defined by one of said valleys and the confronting webs connected thereto;

spaced generally parallel main passageways defined in part by said main unit;

a feeder unit supported on said upper surface and extending transversely away from said main unit;

spaced generally parallel feeder passageways defined in part by said feeder unit and terminating in open feeder passageway ends adjacent to one of said longitudinal edges;

a housing having a removable cover, enclosing a full-width segment of said main unit and said open feeder passageway ends, said housing having opposed sidewalls extending across said full-width segment in unobstructing relation with said lengthwise trough;

a covering layer of concerte surrounding said housing;

a partition extending transversely of said full-width segment in unobstructing relation with said lengthwise trough, said partition dividing the interior of said housing into a first compartment communicating with one of said feeder passageways of said feeder unit and a second compartment communicating with the others of said feeder passageways of said feeder unit;

a first of said main passageways having a first access opening establishing communication with said first compartment;

a second of said main passageways having a second access opening establishing communication with said second compartment;

first and second capping means enclosing those portions of a common lengthwise trough on opposite sides of said housing thereby to provide substantially unobstructed additional main passageways communicating with said second compartment; and

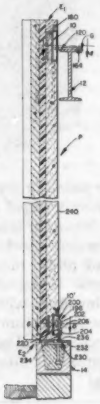
isolator means extending horizontally between the crests on opposite sides of said common lengthwise trough, isolating said first compartment from said common lengthwise trough.

4,194,333

ATTACHMENT FOR MOUNTING CONCRETE WALL PANELS ON A BUILDING

W. Donald Paton, Aurora, and Thomas W. Steenson, Richmond Hill, both of Canada, assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed May 24, 1978, Ser. No. 908,965
Int. Cl.[2] E04B 1/41
U.S. Cl. 52—235 **8 Claims**



1. An attaching means for attaching wall panels to a building comprising:

a plurality of first inserts mounted in a wall panel near one end thereof;

a plurality of second inserts mounted in such wall panel near another end thereof which is remote from said one end;

said inserts each including elongate chamber defining means defining a first chamber for accommodating concrete, said chamber having open ends so concrete can flow freely therethrough and thereinto for securely mounting said each insert in a wall panel, said chamber defining means including a pair of opposed U-shaped side members each having one leg thereof extending toward the other side member and located to be essentially coplanar with one leg of the other side member and spaced apart therefrom

to define said elongate slot between said one legs, and elongate slot defining means on said each insert;

a partition mounted in each of said inserts and including means for separating said first chambers from said slot and defining a slot chamber which is essentially isolated from said first chamber and which remains essentially free of concrete, said partition being U-shaped and having the legs thereof connected to said side member one legs so that said chamber is defined by said one legs, said partition and portions of said side members;

a plurality of tongue elements each having tongue slots defined therein near one end thereof, said tongue slots having rounded bottom edges and slidably engaging an elongate slot defining means of one of said first inserts with said tongue one ends being received in one of said first insert slot chambers so that said each tongue is slidably connected to said one insert with the other ends thereof projecting outwardly therefrom, a tongue clamp element on each tongue connecting the other end of said each tongue to a building to connect a panel to such building with the sliding engagement between said each tongue and said first insert allowing relative vertical movement between a building connected panel and the building to which such panel is connected, said tongue clamps including a head for fitting over a beam and locking means attaching each tongue clamp to a tongue;

a plurality of bottom clamp elements each associated with one of said second inserts and each including a fastening means secured to one of said second inserts, mounting means on a building, said each bottom clamp element fastening means being slidably engaged with said mounting means to connect a panel to a building such that relative movement between a building connected panel and the building to which such panel is connected is permitted.

4,194,334

SELF-SEALING SOLAR COLLECTOR SHIELD

Joseph W. Katona, Walled Lake, Mich., assignor to Mills Products, Inc., Farmington, Mich.

Filed Jun. 5, 1978, Ser. No. 912,755
Int. Cl.[2] E04B 1/62
U.S. Cl. 52—397 **12 Claims**

1. A self-contained window unit adapted to be assembled in a solar collector shield or the like having means defining a window opening, said window unit comprising a glass pane, retaining means for said pane comprising a window frame extending along the peripheral edge portions of said pane, a mounting frame secured to said window frame for mounting said window unit in said window opening, and a peripheral seal carried by said mounting frame, said peripheral seal having a first portion in sealing contact with said glass pane and a second portion in sealing contact with said window frame.

4,194,335

SINGLE SHEATHING ROOF PANEL

John N. Diamond, P.O. Box 93, Malvern, Pa. 19355

Continuation-in-part of Ser. No. 858,836, Dec. 8, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 891,326
Int. Cl.[2] E04D 1/00
U.S. Cl. 52—419 **9 Claims**

1. A kit of prefabricated panels for roof construction including only four panels, said panels having characteristic end configurations designed to achieve an interlocking and interwoven relationship of shingles at the ends of selected panels which are butted together on a roof and a staggered overlapping relationship between the shingles on adjacent top and bottom edges when said panels are positioned in a vertical array of panel courses on a roof, said shingles of said panels including strips with upper straight edges along which said strips are secured to base sheets of said panels and lower incised unsecured edges in the provision of a plurality of unsecured liftable tabs, said shingle strips being self-sealing, one to the other in response to the heat of the sun comprising:

a base sheet for each of said four panels having at least one end to be butted against a selected said at least one end of another panel;

a first panel having four courses of shingles thereon extending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, a first course of said shingles having a top layer of shingles and a bottom layer of shingles, the end shingles of the respective courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,

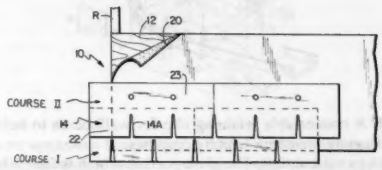
the end shingle of said top layer of said first course is flush with said at least one end while the bottom layer overlaps said at least one end,

the end shingle of a second course overlaps said at least one end,

the end shingle of a third course is flush with said at least one end, and

the end shingle of a fourth course overlaps said at least one end;

a second panel having four courses of shingles thereon extending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, a first course of said shingles having a top layer of shingles and a bottom layer of shingles, the end shingles of the respec-



tive courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,

the end shingle of said top layer of said first course is flush with said at least one end while the end shingle of said bottom layer is indented inwardly of the panel from said at least one end,

the end shingle of a second course is indented inwardly of the panel from said at least one end,

the end shingle of a third course is flush with said at least one end, and

the end shingle of a fourth course is indented inwardly of the panel from said at least one end;

a third panel having five courses of shingles thereon extending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, the end shingles of the respective courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,

the end shingle of a first course is flush with said at least one end,

the end shingle of a second course overlaps said at least one end,

the end shingle of a third course is flush with said at least one end,

the end shingle of a fourth course overlaps said at least one end, and

the end shingle of a fifth course is flush with said at least one end;

a fourth panel having five courses of shingles thereon ex-

tending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, the end shingles of the respective courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,

the end shingle of a first course is flush with said at least one end,

the end shingle of a second course is indented inwardly of the panel with respect to said at least one end,

the end shingle of a third course is flush with said at least one end,

the end shingle of a fourth course is indented inwardly of the panel with respect to said at least one end, and

the end shingle of a fifth course is flush with said at least one end.

4,194,336

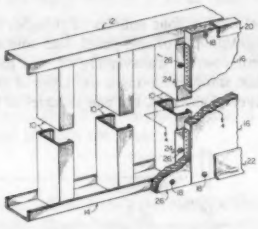
CONCEALABLE RETAINING CLIP FOR WALLBOARDS

Roger N. Weinar, 168 W. Woodside Ave., Buffalo, N.Y. 14220

Filed Nov. 21, 1977, Ser. No. 853,046

Int. Cl.[2] E04B *5/52*

U.S. Cl. 52—481 **11 Claims**



1. A concealable retaining clip for wallboards to hold them to framing members which comprises:

(A) a substantially flat plate portion which is fastenable to a framing member;

(B) a barb carrier portion which is a substantially perpendicular extension of said plate portion; and

(C) a plurality of spaced apart barbs carried by the barb carrier portion and having impaling edges thereof directed toward the plane of the plate from said barb carrier portion in alternately opposing outward directions away from the plane of the barb carrier portion so that said barbs may hold adjacent wallboards in position with one such wallboard pressing against the substantially flat plate portion of the retaining clip and the other pressing against a framing member to which said clip is fastenable.

4,194,337

MOUNTING ELEMENT

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3 (Tumlingen), Federal Rep. of Germany

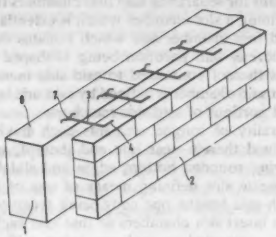
Filed Nov. 8, 1978, Ser. No. 958,990

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752032

Int. Cl.[2] E04B *1/38*

U.S. Cl. 52—713 **11 Claims**

1. A mounting element for connecting a ventilated cladding structure to a support wall, particularly one composed of aerated cement blocks, with the use of a wire anchoring member having one end mortared in a joint of the cladding structure, the mounting element comprising an eye-like receiving portion arranged to receive another end of the wire anchoring member, and a plate-like holding portion arranged to be driven into the supported wall retained in the latter and connected with said eye-like receiving portion so as to connect the support wall through said eye-like receiving portion and said anchoring member, with the cladding structure.



4,194,338

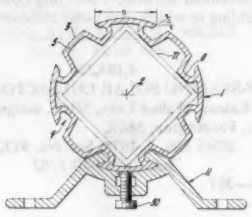
CONSTRUCTION COMPONENTS, ASSEMBLIES THEREOF, AND METHODS OF MAKING AND USING SAME

Ronald H. Trafton, 527 Berry Patch La., Pontiac, Mich. 48054

Continuation-in-part of Ser. No. 835,008, Sep. 20, 1977, Pat. No. 4,142,343. This application Dec. 22, 1978, Ser. No. 972,394

Int. Cl.[2] E04C *3/32*

U.S. Cl. 52—721 **10 Claims**



1. An apparatus comprising:

an elongated support member having a major longitudinal central axis and an outer periphery which includes at least one groove therein;

said elongated support member having a tubular configuration which has a substantially constant wall thickness;

said groove being disposed substantially parallel to said major longitudinal central axis of said elongated support member;

said groove having an arcuate side wall portion and a substantially flat side wall portion;

said groove including a flat base portion which is disposed in a flat plane that is oriented substantially perpendicular to a radius emanating from said major longitudinal central axis of said elongated support member; and

interconnecting means for assembling at least one said elongated support member into a building structure member.

4,194,339

METHOD FOR CONSTRUCTING TOWN HOUSES AND THE LIKE

John S. Fisher, 23310 Aetna St., Woodland Hills, Calif. 91364

Continuation of Ser. No. 823,459, Aug. 10, 1977, abandoned, which is a division of Ser. No. 364,808, May 29, 1973, Pat. No. 4,073,102. This application Aug. 7, 1978, Ser. No. 931,307

Int. Cl.[2] E04B *1/00*

U.S. Cl. 52—745 **8 Claims**

1. A building construction method for providing at a build-

ing site a plurality of adjoining plural-story building units, comprising the following steps:

A. at a prefabricating site remote from the building site:

1. casting a large number of reinforced concrete modules of two basic types:

a. for understories, U-shaped modules having a floor slab integral with two parallel load-bearing sidewalls which are laterally spaced apart by the floor slab at the full width of the building unit with which they are to be used, each of said U-shaped modules having an open top,

b. for the top stories only, tube-shaped modules having two parallel load-bearing sidewalls spaced apart laterally from each other at the full width of the building unit with which they are to be used and joined to each other by a floor slab and a ceiling slab, both integral with said sidewalls,

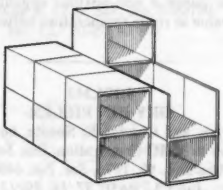
2. prefinishing each module so that finishing at the building site is minimized, said prefinishing including finishing the bottom of each module, except those to be used on the lowest story, to provide a suitable ceiling for the story therebelow,

B. transporting from said prefabricating site to said building site a sufficient number of modules, unconnected to each other, for making the building to be built there,

C. at said building site:

1. providing foundation structure for each of said building units,

2. placing on said foundation structure for each said building unit a first-story series of U-shaped modules, there



being a plurality of such modules for each building unit with their sidewalls aligned along two parallel planes, so that the modules are longitudinally aligned,

3. spacing apart the sidewalls of adjacent building units to provide a double-wall thickness and an airspace between each pair of adjacent building units,

4. permanently securing said modules to said foundation structure and permanently securing the modules for each building unit together,

5. anchoring to said foundation at the bottom of said airspace a plurality of vertically extending post-tensioning strands extending up between modules in the airspace,

6. positioning polystyrene rods horizontally between the upper edges of the adjacent sidewalls of modules of adjoining units, spanning the airspace therebetween to maintain it and to help convert the airspace therebetween into a dead-air space,

7. for each additional story except the uppermost story of each unit, placing and permanently securing in place on top of the story therebelow, additional U-shaped modules with the bearing walls of each upper story in line with those of the modules therebelow,

8. positioning polystyrene rods horizontally as in step C-6 for each story of U-shaped modules,

9. for the uppermost story only, placing and permanently securing in place to each other and to the U-shaped modules of the stories directly therebelow, tube-shaped modules with their sidewalls vertically aligned with those of the U-shaped modules therebelow,

10. positioning polystyrene rods, as in step C-6, horizontally between the upper edges of the tube-shaped modules of adjoining units,

11. positioning polystyrene rods vertically at each vertical extremity of the airspace of adjoining units for the full height of each module, so that the airspace is fully enclosed,

12. post-tensioning the post-tensioning strands, with means bearing against the upper portions of said tube-shaped units, and

13. roofing over the structure over the slab ceilings of said uppermost story,

whereby redundancy of ceilings and walls is avoided in each building unit and double thickness with dead-air space are provided between adjacent living units.

4,194,340

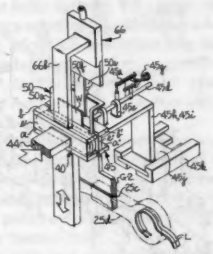
APPARATUS FOR PACKAGING SHOELACES: ESPECIALLY OF THE ROUND TYPE

Newman McIntyre, Shelby, N.C., assignor to McIntyre Packaging Company, Shelby, N.C.

Filed Mar. 15, 1978, Ser. No. 886,660

Int. Cl.[2] **B65B** *63/04, 11/08*

U.S. Cl. 53—119 **12 Claims**



1. In an apparatus for packaging shoelaces having winding means for winding shoelaces into circular convolutions and means for flattening and thereby elongating the convolutions while moving the same away from the winding means; the combination therewith of

a first lace receiving unit defining a first elongate lace confining channel therein and normally occupying a first position for receiving and confining therein the flattened shoelace convolutions from the winding means, and said first lace receiving unit having an elongate opening in one side thereof communicating with said first channel,

a second lace receiving unit spaced vertically away from said first lace receiving unit in its first position and defining a second elongate lace confining channel therein, said second lace receiving unit also having an elongate opening in one side thereof communicating with said second channel,

means for positioning a wrapper to extend across a medial portion of the opening in said second lace receiving unit,

reciprocating means for moving said first lace receiving unit in a substantially vertical direction to a second position in proximal side-by-side relation to said second lave receiving unit with said elongate openings of the units in substantially aligned communicating relationship and so that the wrapper then is disposed between said first and second lace receiving units,

means for transferring the flattened shoelace convolutions from said first channel, through said elongate openings into said second channel so that the wrapper is wrapped partially around the flattened convolutions and comprising a plunger positioned and movably mounted within said first channel and extending longitudinally thereof and serving to define a channel wall movable transversely within the channel,

means for then moving at least one of said lace receiving units away from the other lace receiving unit to provide therebetween a space for accommodating a folding operation,

folding means movable into the space between said receiving units for folding opposite ends of the wrapper into overlapping relation against the corresponding side of the shoelace convolutions, and

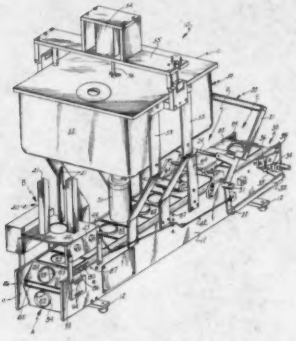
means for removing the thus wrapped shoelace convolutions from said second lace receiving unit and comprising a plunger positioned and movably mounted within said second elongate channel and extending longitudinally thereof and serving to define a channel wall movable transversely within the channel.

4,194,341

HAND OPERATED FILLING AND SEALING DEVICE

Lee S. Kihnke, and Gary Kruse, both of Spring Lake, Mich., assignors to JSJ Corporation, Grand Haven, Mich.

Filed Dec. 5, 1977, Ser. No. 857,426
Int. Cl.[2] B65B *3/06*
U.S. Cl. 53—282 **18 Claims**



1. A manually operated portion packaging apparatus for denesting, filling and sealing of a container in a sequential series of manually initiated step operations, said portion packaging apparatus including:

a handle means positionable between an up and a down position for initiating said step operations, a complete cycle of said handle means including movement of said handle means from said up position to said down position and back to said up position, said cycle being repeated for sequential operations of said portion packaging apparatus;

a rotatable endless conveyor means having a plurality of container receiving means therein and movable in a downstream direction;

coupling means for intermittently moving said conveyor means one step in response to movement of said handle means from said up position to said down position;

a container dispenser means positioned above one of said container receiving means when said handle means is in said down position and coupled to said handle means so that one container is released when said handle is moved from said down position to said up position;

a material dispenser means positioned above an other of said container receiving means while said container dispenser means is positioned above said one container receiving means and when said handle means is in said down position and coupled to said handle means so that when said handle is in said down position, a predetermined quantity of the material from said material dispenser means is released and deposited in said other container carried by said conveyor chain;

a sealing means for closing a filled container, said sealing means including a sealing film dispenser for positioning a sealing film on still an other container while said container dispenser means is positioned above said one container receiving means, said sealing means also including a heating element for applying heat to said sealing film positioned on a container, said heating element being coupled to said handle means so said heating element is in an inoperable position displaced from said sealing film when said handle means is in an up position and said heating element is in an operable position contacting said sealing film when said handle means is in a down position; and

a cutter means for cutting said sealing film downstream of said operable position of said heating element, said cutter means coupled to said handle means so as to be positioned in an inoperable position displaced from said sealing film when said handle means is in an up position and positioned in an operable position adjacent said sealing film when said handle means is in a down position.

4,194,342

FOLDED PAPER EDGE OPENING PROCESS

Joseph Savit, Glencoe, Ill., assignor to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Sep. 27, 1978, Ser. No. 946,347
Int. Cl.[2] B65B *43/26, 69/00*
U.S. Cl. 53—492 **12 Claims**

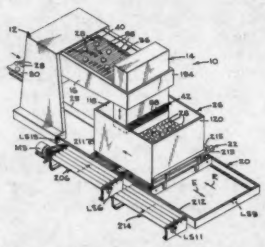
1. In the method of opening envelopes made of cellulosic paper in which at least one chemical reagent is applied to at least one edge of each envelope followed by the application of heat and mild mechanical action thereto, the improvement wherein said chemical reagent comprises as the sole reactant with cellulosic paper a non-noxious organic acid having at least one pK value at room temperature between about 1.5 and about 5.

4,194,343

DRY BIN FILLER

Harold E. Myers, and Charles E. Sheetz, both of Woodstock, Va., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 19, 1976, Ser. No. 649,933
Int. Cl.[2] B65B *57/14, 39/12*
U.S. Cl. 53—493 **7 Claims**



1. An apparatus for gently transferring irregularly sized, fragile articles from a supply conveyor to a storage bin, said apparatus comprising:

means defining a transversely elongate inlet portion for receipt of said articles;

means defining a transversely elongate discharge portion for depositing said articles in said bin, said elongate inlet and discharge portions accomodating a row of articles;

means for establishing relative movement between said bin and said elongate discharge portion in a direction transverse to the elongate direction of said discharge portion;

means including a pair of opposed article gripping conveyors for downwardly conveying said articles between said inlet portion and said discharge portion, said gripping conveyors having opposed elongate resilient means for gently cradling and suspending said articles between verti-

cally adjacent pairs of said opposed resilient means, and said resilient means being uniformly spaced along each conveyor in the direction of movement thereof by an interval selected according to the size range of said articles conveyed therebetween;

means connected to said means defining said discharge portion for gently directing said articles from a lower end of said opposed gripping conveyors into said bin;

means for reversing said directing means to discharge said articles alternately from opposite sides of said elongate discharge portion in accordance with the direction of relative motion of said bin and discharge portion; and

means for coordinating the operation of said reversing means with the position of said articles in said discharge portion to prevent the movement of said directing means when any of said articles have just excited said discharge portion thereby eliminating possible damage to said any of said articles by the movement of said directing means.

4,194,344

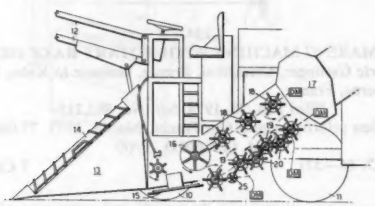
SUGAR CANE HARVESTERS

Mizzi Joseph M., Halifax Rd., Ingham Queensland, Australia

Filed May 8, 1978, Ser. No. 903,793

Int. Cl.[2] A01D *45/10*

U.S. Cl. 56—13.9 **6 Claims**



1. A sugar cane harvester of the type having a frame and a cane stalk feed conveyor, comprising:

(a) a series of upper feed rollers mounted on said frame, and means for driving said feed rollers in a first direction,

(b) a series of lower feed rollers mounted on said frame, and means for driving said lower feed rollers in a second direction opposite to the direction of said upper feed rollers, each of said lower feed rollers being formed with a series of longitudinal, radially extending and arcuately spaced vanes the outer edges of which are serrated, said upper and lower feed rollers being adapted to convey cane stalks between them;

(c) a plurality of cleaning rollers mounted on said frame, each of said cleaning rollers being positioned between successive lower feed rollers, with the plane containing the uppermost parts of the cleaning rollers being below the plane containing the uppermost parts of the lower feed rollers, each of said cleaning rollers being formed with a series of longitudinal, radially extending and arcuately spaced vanes the outer edges of which are serrated, the vanes of said cleaning rollers and adjacent lower feed rollers being in intermeshing relationship, and means for driving said cleaning rollers in a direction opposite to the direction of rotation of said lower feed rollers, whereby leafy matter is torn away from the conveyed cane stalks.

4,194,345

LAWNMOWER

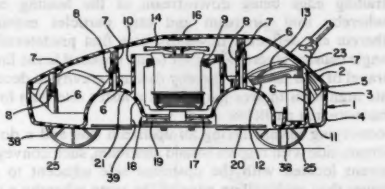
Peter P. Pioch, Idstein, and Rainer Bachmann, Hohenstein, both of Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 14, 1978, Ser. No. 915,627

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727157

Int. Cl.[2] A01D *35/20*

U.S. Cl. 56—17.5 **22 Claims**



1. A rotary lawnmower having a rotary cutting blade defining a cutting plane comprising:

a one-piece dish-like body defining the chassis of the lawnmower and having a substantially continuous bottom wall at least a portion of which is substantially in the plane defined by the cutting blade;

said dish-like body further having a wall extending upwardly from said bottom wall to define the outermost peripheral sidewall of said body;

said outermost peripheral side wall including an uppermost edge extending about the entire periphery of said body;

a motor equipped with an output drive shaft having a free end, said motor being mounted in said body so as to cause said free end to penetrate said bottom wall for carrying the cutting blade thereon; and,

a cover coextensive with said uppermost edge of said outermost peripheral side wall, said cover being engageable with said outermost side wall at said uppermost edge to conjointly define with said dish-like body a housing enclosing said motor.

4,194,346

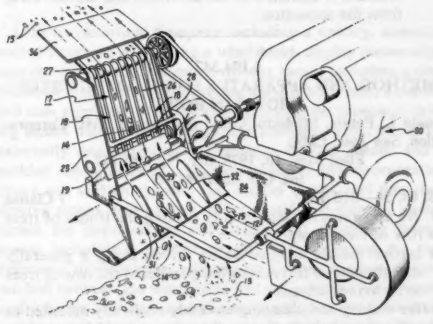
HARVEST SEPARATOR

Charles C. Ingalls, P.O. Box 382, Ceres, Calif. 95307

Filed Feb. 27, 1978, Ser. No. 881,542

Int. Cl.[2] A01D *51/00*

U.S. Cl. 56—328 R **4 Claims**



1. A mobile apparatus for harvesting nuts and the like together with various harvest debris which particles have been placed in elongated windrows on the orchard floor, comprising:

a. a mobile frame which is movable over the orchard floor along a path substantially parallel to said windrows;
b. means for blowing an airstream of air generally parallel to said orchard floor and substantially transverse to said windrow whereby said particles are entrained in said airstream;
c. a ramp inclined upwardly along a longitudinal axis having a leading edge at substantially the level of the orchard floor and a trailing edge elevated above the orchard floor, said ramp being positioned with its longitudinal axis in said airstream and said particles entrained therein and with the trailing edge being downstream of the leading edge, whereby said airstream and said particles entrained therein are deflected upwardly at a first predetermined angle causing a verticle vector being imposed in the line of travel of said particles thereby causing gravity to decelerate high mass-to-area particles at a faster rate than lower mass-to-area particles;
d. conveying means having an upstream side and a downstream side with respect to said airstream, such conveying means located with the upstream side adjacent to and lower than said trailing edge of the ramp whereby a portion of the high mass-to-area particles, the nuts and the like, descend over the edge of said trailing edge of said ramp and onto said conveying means due to deceleration by gravity and the balance of said particles remain entrained in said airstream; and
e. an upwardly movable surface,
(1) having an upper portion and a lower portion and positioned with its lower portion substantially adjacent to said downstream side of said conveying means,
(2) inclined upwards along a longitudinal axis in substantial alignment with the longitudinal axis of said ramp, said inclination being such as to further deflect the particles therein by a second predetermined angle causing an increased vertical vector to be imposed in the line of travel of said particles thereby causing gravity to decelerate high mass-to-area particles at a faster rate than the low mass-to-area particles whereby a portion of said debris is carried in said stream to the upper portion of the movable surface without contacting the movable surface,
(3) the upwardly movable surface having openings over a predetermined area thereof, said openings being smaller than the size of the nuts and the like whereby the force by which the airstream forces the nuts and the like against the movable surface is less than the pull of gravity thereon causing the nuts and the like to descend onto the conveying means below and whereby the debris is held by the airstream against said movable surface with sufficient force to cause the movable surface to move said debris to the upper portion of said movable surface where it is ejected into the airstream and carried away from the apparatus.

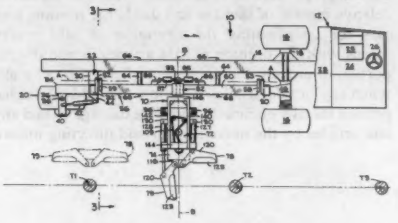
4,194,347

METHOD AND APPARATUS FOR SHAKING TREES GROWN IN ROWS

Ronald L. Peters, Modesto, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 10, 1978, Ser. No. 885,147
Int. Cl.[2] A01D *46/00*
U.S. Cl. 56—328 TS **7 Claims**

1. An apparatus for sequentially shaking the trunks of trees in a row of trees comprising:
a carrier vehicle adapted to be driven along a generally straight path of travel which is parallel to the row of trees to be harvested; and
a tree shaking and clamping assembly resiliently mounted to said carrier vehicle to extend transversely with respect to said straight path of travel, said assembly including
a housing;
a first clamping arm pivotally mounted on said housing for rotation about an axis which is proximal to said row of trees to be shaken, said arm being pivotable through an arcuate path from a stowed position extending forwardly of and generally parallel said path of travel to a transversely extended position adapted to engage the leading side of the trunk of a tree to be shaken;
a second clamping arm pivotally mounted to said housing for rotation about an axis which is parallel to the axis of rotation of said first clamping arm, said second clamping arm being mounted to the rear of said first arm, said second arm being pivotable through an arcuate path from a



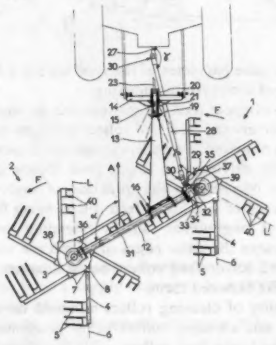
stowed position extending rearwardly of and generally parallel to said path of travel to a transversely extended position adapted to engage the trailing side of the trunk of a tree to be shaken;
first means mounted to said housing for pivoting said first clamping arm;
second means mounted to said housing for pivoting said second clamping arm, said first and second means being selectively and independently operable; and,
means for applying shaking forces to said arms.

4,194,348

HAYMAKING MACHINE WITH ROTARY RAKE HEADS

Frederic Gerlinger, Ottersthal, France, assignor to Kuhn, S.A., Saverne, France

Filed Feb. 28, 1978, Ser. No. 882,215
Claims priority, application France, Mar. 4, 1977, 77 06885
Int. Cl.[2] A01D *79/00*
U.S. Cl. 56—377 **7 Claims**



1. A haymaking machine for the lateral windrowing of fodder, comprising at least two rotary rake heads which are driven in rotation so as to turn in the same direction about substantially vertical axes, several tool-carrier arms mounted on each said rake head for oscillation about their longitudinal axes, said arms extending outwardly from adjacent the vertical axis of their associated rake heads, control mechanism disposed about said vertical axes for oscillating said arms so as to cause the working tools, over a partial zone of their trajectory, to

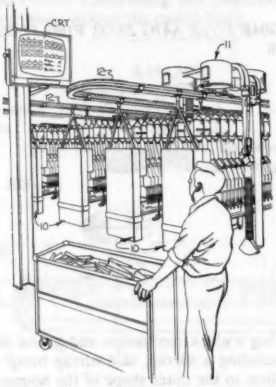
pivot upward and in the direction opposite to the direction of rotation of the rotary rake heads, a support chassis that interconnects said rake heads and which is disposed obliquely in relation to the direction of travel of the machine, a hitch device permitting coupling of the machine to the three-point hoist device of a propelling tractor, and a connection beam which connects the chassis to the hitch device, and a substantially vertical pivot spindle which connects the front end of said beam to the hitch device, the rear end of said beam being rigidly connected to said chassis in such manner as to retain said chassis during normal operation in a position in which it constantly forms an obtuse angle with the direction of travel of the machine.

4,194,349

APPARATUS AND METHOD FOR GATHERING AND DISPLAYING INFORMATION

John E. Lane, Littleton, Mass., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed Apr. 26, 1978, Ser. No. 900,267
Int. Cl.[2] D01H *13/32*
U.S. Cl. 57—265 **60 Claims**



1. In apparatus for displaying information regarding the operating conditions of a group of ring spinning machines in a textile mill wherein each machine has delivery rolls from which strand material issues and intermediate guides through which strand material passes and ring rails by which strand material is formed into packages during winding thereof, and wherein the apparatus has at least one traveling unit supported for travel along a predetermined path for traversing one or more of the machines, detectors mounted on the traveling unit for monitoring ends of strand material normally being formed by a traversed machine, and a data system responsive to the detectors for determining the ends down condition of the traversed machine from the conditions of the monitored ends, an improvement comprising:

rotation sensor means mounted on each machine of the group for signalling revolutions of the delivery rolls of the machine,

processor means operatively communicating with each of said sensor means of the group of machines and responsive to sensor signals for determining from said signals an operating condition of respective ones of the machines of the group and for generating display signals indicative of the determined conditions of the machines, and

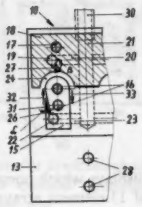
visual display means operatively communicating with said processor means and responsive to generated display signals for presenting a visual display of the determined condition of at least a selected one of the group of machines.

4,194,350

THREAD DEFLECTING ELEMENT FOR A DRAW-TEXTURING MACHINE

Hans Schellenberg, and Walter Vetterli, both of Winterthur, Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Jul. 24, 1978, Ser. No. 927,574
Claims priority, application Switzerland, Jul. 23, 1977, 9117/77
Int. Cl.[2] D01H *13/04, 13/08*
U.S. Cl. 57—352 **18 Claims**



1. A thread deflecting element for a heater of a draw-texturing machine, said element comprising

means defining an arcuate groove for passage of a thread, said groove having a thread entrance at one end and a thread exit at an opposite end;

a first duct merging into said groove from a side within the curvature of said groove; and

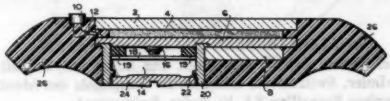
a second duct merging into said groove from an opposite side outside said curvature of said groove.

4,194,351

ELECTRONIC TIMEPIECE

Kazunari Kume, and Yasushi Nomura, both of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1977, Ser. No. 853,864
Claims priority, application Japan, Nov. 26, 1976, 51-141174
Int. Cl.[2] G04C *3/00*
U.S. Cl. 368—82 **7 Claims**



1. In an electronic timepiece including a unitary, interconnected structure comprising a windshield, display means adjacent the windshield, timepiece driving means including a time reference signal source for driving the display means, a battery cell case receiving a battery cell supplying the timepiece driving means with driving energy, and external switch means for externally controlling said timepiece driving means and a molded casing made of resin formed about and incorporating into a unit said windshield, said display means, said timepiece driving means, said battery cell case and said external switch means the improvement comprising said timepiece driving means including a printed circuit board carrying the time reference signal source, wherein said display means is sandwiched between the windshield and the printed circuit board, and wherein said battery cell case is adjacent the printed circuit board and has a partition therein forming first chamber for enclosing a trimmer capacitor attached to the printed circuit board and forming a second chamber for receiving the battery cell supplying the timepiece driving means with driving energy.

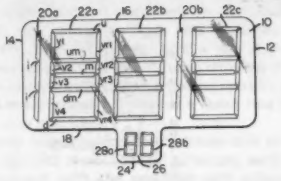
4,194,352
COMPACT, MULTI-FUNCTIONAL DIGITAL TIME DISPLAYS

Berj A. Terzian, 66 Hirst Rd., Briarcliff Manor, N.Y. 10510

Continuation-in-part of Ser. No. 861,115, Dec. 16, 1977, and Ser. No. 886,121, Mar. 13, 1978. This application Aug. 11, 1978, Ser. No. 932,921

Int. Cl.[2] G04B *19/30*

U.S. Cl. 368—239 **23 Claims**



1. Digital time displays which comprise:

(a) a plurality of 13-element arrays of digital time display elements;

(b) each array comprising five horizontal line display elements spaced vertically apart from each other, with the respective left and right ends thereof in substantial vertical alignment;

(c) each array further comprising two sets of four vertical line display elements bridging, respectively, the aligned left ends and the aligned right ends of the five horizontal elements, whereby in each array,

(i) the highest, central and lowest horizontal elements and all the vertical elements are selectively displayable in combinations to display relatively large digits,

(ii) the highest, second highest and second lowest horizontal elements and the vertical elements bridging the aligned ends thereof are selectively displayable in combinations to display smaller digits, relative to (i), in a relatively upper position, and

(iii) the lowest, seocnd lowest and second highest horizontal elements and the vertical elements bridging the aligned ends thereof are selectively displayable to display smaller digits, relative to (i), in a relatively lower position.

4,194,353
ANALOG DISPLAY CALENDAR WATCH

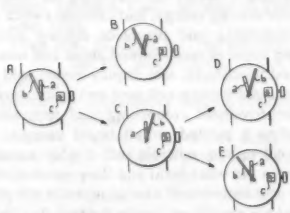
Michel Thomi; Michel Groothuis, and Serge Meylan, all of St.-Imier, Switzerland, assignors to Compagnie des Montres Longines Francillon SA, St.-Imier, Switzerland

Filed May 19, 1978, Ser. No. 907,701

Claims priority, application Switzerland, May 27, 1977, 6538/77

Int. Cl.[2] G04B *19/24, 27/00*

U.S. Cl. 368—38 **5 Claims**



1. An analog digital display calendar watch, comprising:

an hour hand capable of being rotatably advanced or reversed by steps of 1/12 of a turn;

a wheel making one rotation every 24 hours as indicated by the watch, said 24-hour wheel having a pin;

a rocker lever mounted on the watch, said pin rocking said lever once every ≧hours;

a pinion rotatably carried on said rocker lever for engaging said 24-hour wheel;

a plate secured to said pinion having a catch;

a calendar disc having spaced teeth for engagement with said catch; and

a jumper engaging said disc teeth for positioning said disc;

said rocking of said lever causing said catch to engage between two consecutive teeth of said calendar disc, so that said disc is automatically and rapidly driven in a direction corresponding to that of said hour hand, regardless of the mode of advance and direction of rotation of said hours hand.

4,194,354
TIMER

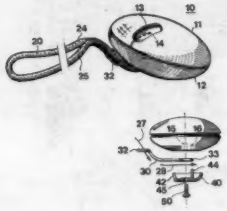
Paul Terraillon, Le Mont Gosse, 74 560 Monnetier-Mornex, France

Filed May 8, 1978, Ser. No. 903,495

Claims priority, application Switzerland, Feb. 6, 1978, 1283/78

Int. Cl.[2] G04B *37/12*; A47G *29/00*; F16G *11/00*

U.S. Cl. 368—276 **1 Claim**



1. A timer having a clock mechanism and a case housing, said timer also including a stirrup, said stirrup being shaped generally to conform to the outer shape of the housing adjacent thereto, one end of said stirrup having an eyelet, the other end of said stirrup having a loop, a cord, said cord being doubled to have two strands, the two strands of said cord passing frictionally through said loop and along said stirrup toward said eyelet and terminating adjacent said eyelet, a cap, a notch in the periphery of said cap, said strands and said stirrup extending through said notch, means for attaching said cap to an adjacent part of said case with said eyelet and the ends of said strands therebetween.

4,194,355
CONNECTION STRUCTURE FOR WATCH CASE AND BAND

Mitsuo Nishida, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1978, Ser. No. 879,583

Claims priority, application Japan, Feb. 26, 1977, 52-21958[U]

Int. Cl.[2] G04B *37/12*

U.S. Cl. 368—282 **5 Claims**

1. A connection structure between a watch casing and a watchband comprising:

(a) a body for said watch casing,

(b) at least one internal module incorporated within said body,
(c) a recess formed at the bottom surface of said body,
(d) a pluralilty of electrical connector pins each having one end exposed at an upper portion of said recess and each being connected to at least one of said internal modules,
(e) a connector block of an elastic insulating material disposed in said recess and provided with a plurality of resilient conductors extending between an upper and lower surface thereof, said resilient conductors electrically connected to said electrical connector pins at the upper surface of the connector block,
(f) a flexible insulating material provided at the proximal end of said watchband with a projection received in said recess,
(g) at least one external module attached to said watchband,
(h) a plurality of connector wires embedded in said watch band, each end of said wires being connected to an individual terminal in contact with one of said resilient conductors at the lower surface of the connector block, the other end of said wires connected to at least one of said external modules, and
(i) a back cover compressing said projection and said connector block against the casing body.

4,194,356

THERMO WRIST WATCH

Nick Mazzilli, 7540 Garnier St., Apt. 3, Montreal, Quebec, Canada

Filed Mar. 23, 1978, Ser. No. 889,562
Int. Cl.² G04B 47/06
U.S. Cl. 368—11 **10 Claims**

1. A watch and thermometer arrangement, comprising:
a dial face having a crystal covering;
means, for carrying a thermometer, comprising a channel, outside of said crystal cover, surrounding said dial face;
a thermometer mounted in said means for carrying a thermometer;
said thermometer being mounted on a plurality of spaced y-shaped stands in said channel;
each said y-shaped stand comprising a vertical post and a u-shaped cradle mounted at one end of the vertical post;
the thermometer being carried in the cradles of the y-shaped stands;
at least the cradle of each y-shaped stand being made of an insulating material.

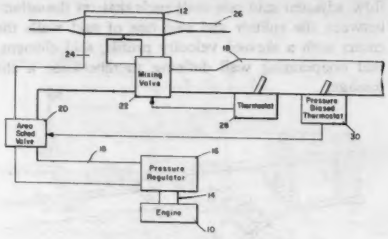
4,194,357

AUTO IGNITION TEMPERATURE CONTROL SYSTEM

Dan S. Matulich, Rolling Hills Estates, Calif., and B. Franklin Saylor, Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 704,903, Jul. 13, 1976, Pat. No. 4,102,387. This application Mar. 14, 1978, Ser. No. 886,388
Int. Cl.² F28F 27/00
U.S. Cl. 60—39.02 **6 Claims**

1. An auto-ignition temperature control system for holding surfaces adjacent fuel vapors to temperatures below a predetermined schedule, said system comprising:
means for thermal conditioning turbine engine bleed air;
first thermostat means for controlling said thermal conditioning means;
valve means for limiting flow of bleed air through said thermal conditioning means;



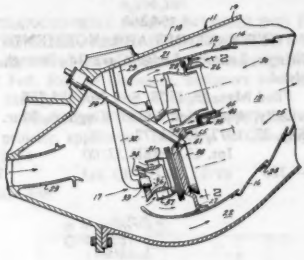
second thermostat means for controlling said valve means to limit output of said thermal conditioning means to a threshold temperature; and
pressure responsive means for varying said threshold temperature with altitude to approximate said predetermined schedule.

4,194,358

DOUBLE ANNULAR COMBUSTOR CONFIGURATION

Richard E. Stenger, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 15, 1977, Ser. No. 860,933
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.06 **15 Claims**



1. An improved double annular combustor of the type having concentrically disposed pilot and main stage sections, wherein the pilot stage section has inner combustor domes and means for fueling said inner combustor domes for lower power operation and the main stage section has outer combustor domes and means for fueling said outer combustor domes only for higher power operation, said pilot stage section being disposed radially inward of the main stage section.

4,194,359

MEANS FOR IMPROVING THE PERFORMANCE OF BURNER SHROUD DIFFUSERS

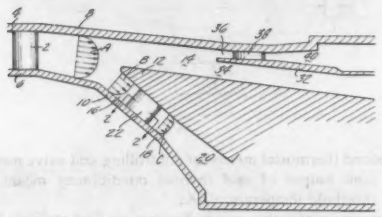
Edward T. Brookman, East Hampton; Robert P. Lohmann, South Windsor, and Stanley J. Markowski, East Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1977, Ser. No. 859,881
Int. Cl.² F02C 3/14
U.S. Cl. 60—39.36 **3 Claims**

1. A burner shroud construction including:
inner and outer walls defining a passage for air flow from the

compressor, the air flow adjacent the walls being slower than the mid-stream flow;

a splitter element cooperating with one of said walls and spaced therefrom to divide the air into combustion air on one side of the splitter and shroud air which receives the flow adjacent said one wall such that on the other side between the splitter and said one of said walls the air enters with a skewed velocity profile, said element and said cooperating wall defining therebetween a shroud passage;



a row of turning vanes extending across said shroud passage to change the flow in said passage and produce a pressure differential on opposite sides of each vane thereby producing vortices between adjacent vanes; and

said shroud passage, downstream of the vanes having diverging walls to form a diffuser, the vortices induced by the vanes being a secondary transverse flow thereby improving and making more uniform the velocity profile across the shroud passage at the upstream end of the diffuser to increase the pressure recovery in the diffuser.

4,194,360

POWER TAKE-OFF ARRANGEMENTS

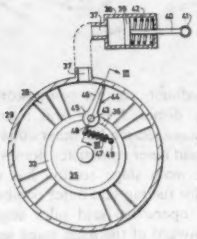
Helmut J. Stieger, Langtree Lodge, Cave Rd., Brough, Humberside, England

Filed Mar. 15, 1978, Ser. No. 886,855

Claims priority, application United Kingdom, Mar. 16, 1977, 11036/77; Sep. 27, 1977, 40091/77

Int. Cl.² F16D *33/00*

U.S. Cl. 60—325 **28 Claims**



1. A power take-off arrangement comprising a high pressure liquid pump intended to be rotated over a relatively wide speed range by a power source and means for maintaining a liquid outlet from said pump at a substantially constant pressure at speeds above a predetermined speed within said speed range, wherein the pump comprises a fixed casing defining an annular liquid chamber, a rotor with a vaned annulus rotatable in said annular liquid chamber, a liquid inlet to said annular chamber, a liquid outlet from said annular chamber, and a gate between said inlet and said outlet intended to allow passage of the rotor thereby whilst obstructing the flow of liquid along said annular chamber externally of the vanes of the rotor.

4,194,361

ELECTRO-MECHANICAL CONTROL SYSTEM FOR HYDRAULIC DISPLACEMENT PUMPS, SUCH AS SWASH PLATE OR ECCENTER PUMPS

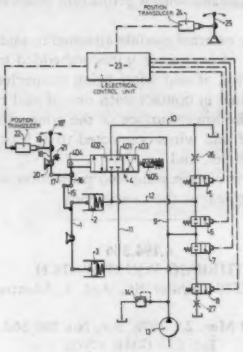
Arnold Pahl, Gerlingen; Hans-Jürgen van der Kolk, Sersheim, and Manfred Lixenfeld, Mettmann, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,598

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727555

Int. Cl.² F15B *9/00*

U.S. Cl. 60—388 **13 Claims**



1. Electro-mechanical control system for hydraulic displacement pumps, such as swash plate or eccentric pumps, having

a movable, mechanical element (**1, 28**) controlling the pump displacement;

hydraulic piston means **2, 3; 2', 3'**) acting on the mechanical element and controlling the displacement of the pump as a function of its position;

a pressure fluid source (**13**) supplying hydraulic pressure fluid to operate said piston means;

an electrical control unit (**23**) and command means (**24, 25**) connected to said control unit (**23**) to enter commands to control said mechanical element (**1, 28**)

and comprising, in accordance with the invention,

a group of selectively electrically energizable valve means (**5, 6, 7, 8**) electrically connected to and controlled by said control unit and hydraulically connecting said source (**13**) and said piston means (**2, 3; 2', 3'**) to selectively apply pressurized hydraulic fluid to said piston means under command of said control unit (**23**);

a main control valve (**4, 4'**) connected to said source and to said valve means (**5, 6, 7, 8**);

a manual control lever (**18, 30**) for said first control valve (**4**);

a position transducer (**22**) coupled to said manual control lever and electrically connected to said electrical control unit (**23**);

mechanical linkage means (**15, 16, 17, 18, 19; 29**) interconnecting said mechanical element **1,28**), and said manual control lever (**18, 30**) to provide feedback signals from said mechanical element (**1, 28**) to said control unit and thereby provide a closed control loop for the control unit—valve means—mechanical element positioning system;

and means (**405**) normally maintaining said main control valve (**4, 4'**) in position (**401**) in which fluid flow from the source (**13**) through the main control valve (**4**) is interrupted, while permitting movement of said manual control lever (**18, 30**) by said link means under automatic control and while further permitting manual override under conditions of failure in the electrical system connected to said electrical control unit and direct control of

said main control valve (4, 4') and hence control of application of pressurized hydraulic fluid to said piston means (2, 3; 2', 3').

4,194,362

CONTROL SYSTEM FOR A HYDROSTATIC DRIVE

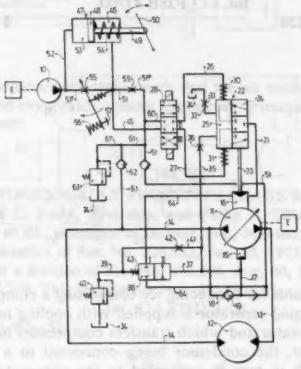
Gerhard Nonnenmacher, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,142

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729512

Int. Cl.² F16D *31/00*; F16H *39/46*

U.S. Cl. 60—431 **15 Claims**



1. In a control system for a hydrostatic drive which includes a hydraulic motor and is powered by an ungoverned combustion engine having a movable throttle flap, a combination comprising adjustable-flow rate main hydraulic pump means; fixed-flow rate auxiliary hydraulic pump means operatively connected with said main hydraulic pump means; a fluid supply conduit connected with said auxiliary hydraulic pump means for supplying the main hydraulic pump means with hydraulic fluid; first throttle means in said fluid supply conduit and operative for producing, in dependence upon variations in the rotational speed of the combustion engine, a first signal for initiating adjustments in the flow rate of said main hydraulic pump means; and second throttle means also interposed in said fluid supply conduit and operative for producing in response to variations of the load on the hydraulic motor, a second signal for initiating movements of the engine throttle flap.

4,194,363

FLUID HORSEPOWER CONTROL SYSTEM

John E. G. Young, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,493

Int. Cl.² F16H *39/46*

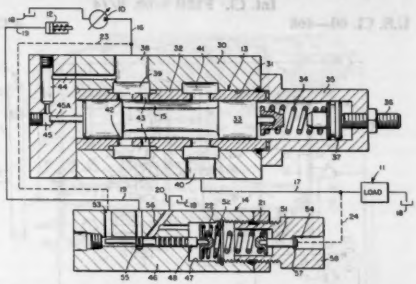
U.S. Cl. 60—445 **7 Claims**

1. A fluid horsepower control system adapted to operate a variable fluid load by output of a variable displacement pump having a variable cam and a control cylinder governed by flow and pressure responsive means for regulating displacement of the pump wherein improved pressure and flow responsive means for governing the variable displacement pump comprises;

(a) normally open flow control means having a pressure compensated variable orifice connected between output of the pump and input to a fluid load for maintaining a pump discharge rate of flow from the pump to the load inversely proportional to the pump discharge pressure, and

(b) load sense control valve means governed by pressure differential across the orifice for selectively applying or relieving pressure on a piston of the control cylinder of the pump to adjust pump displacement to maintain substantially constant maximum horsepower output of the pump under variable load conditions;

(c) whereby the load can utilize substantially constant horsepower approaching a prime mover input torque curve without requiring mechanical feedback from the cam of the pump.



4,194,364

ARRANGEMENT FOR CONTROLLING THE OPERATION OF A FLUID-DISPLACEMENT MACHINE

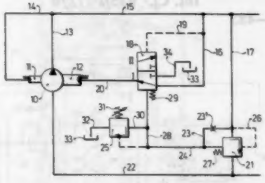
Arnold Pahl, Ditzingen, and Gerhard Nonnenmacher, Korntal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,867

Claims priority, application Fed. Rep. of Germany, May 21, 1977, 2723074

Int. Cl.² F16H *39/46*

U.S. Cl. 60—445 **10 Claims**



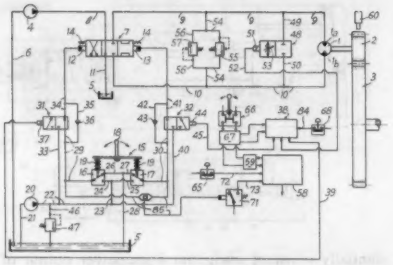
1. In a fluid-flow system of the type including a high-pressure conduit, a throughput-adjustable fluid-displacement machine, a throughput-adjusting device for the machine, a control valve interposed between the throughput-adjusting device and the high pressure conduit, and a pressure-limiting valve communicating with the high-pressure conduit, the improvement comprising a regulating valve commonly associated with said throughput-adjusting device via said control valve and with said pressure-limiting valve; and said control and pressure limiting valves being so constructed that the magnitude of the force required to open said pressure limiting valve exceeds that of the force required to actuate said control valve to a position thereof in which said through-put adjusting device adjusts said machine toward lower throughputs.

4,194,365

HYDRAULIC MOTOR CONTROL

Rene G. Stoufflet, Le Plessis Belleville, and Victor Yeou, Meaux, both of France, assignors to Poclain, Le Plessis-Belleville, France

Filed Jun. 8, 1978, Ser. No. 914,065
Claims priority, application France, Jun. 23, 1977, 77 19309
Int. Cl.[2] F15B *9/08, 9/14*
U.S. Cl. 60—468 4 Claims



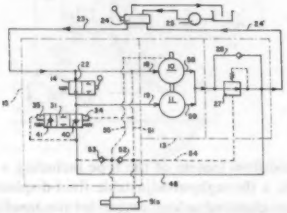
1. A device for automatic stoppage of the rotation of a hydraulic motor having a main control regulator and two hydraulic fluid supply pipes connecting the motor to the main control regulator, the device comprising: a power actuated valve connected between the supply pipes in parallel with the motor, the valve having a closed position and an open position in which flow through the valve is via a throttle orifice, and being under the control of control means arranged such that the valve is in its closed position when the said main control regulator is permitting normal rotation of the motor but is brought into its open position upon closure of the said main control regulator; means for detecting a predetermined angular position of the motor with respect to the desired position of stoppage; and means responsive to said detecting means for closing the valve.

4,194,366

TWO SPEED VALVES AND BI-DIRECTIONAL MOTOR SYSTEM

John D. Petro, Youngstown, Ohio, assignor to Commerical Shearing, Inc., Youngstown, Ohio

Filed Jun. 13, 1978, Ser. No. 915,189
Int. Cl.[2] F15B *11/16*
U.S. Cl. 60—483 7 Claims



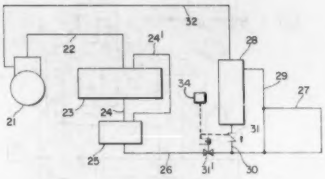
1. A bi-directional motor system comprising a pair of bi-directional motors, a source of fluid under pressure, directional valve means receiving fluid from the source of fluid under pressure and delivering the same selectively to one side or the other of the two motors, a counterbalance valve on one side of said motors between said directional valve means and one side of the two motors, a two speed valve means on the other side of said motors between said directional valve means and the two motors selectively delivering fluid to the other side of at least one of said motors, said valve having a first position wherein the fluid is delivered equally to both said motors for low speed rotation and a second position wherein all fluid is delivered to one of said motors for high speed rotation, flow sensing valve means communicating with the two speed valve means and with said one side of said motors, said flow sensing valve means being closed when the two speed valve is in first position and open to recirculate fluid from said one side of the motors through the other of said motors when said two speed valve is in its second position.

4,194,367

APPARATUS FOR PRODUCING ICE

Ingvar Lavik, Gjettum, Norway, assignor to A/S Finsam Industries Ltd., Grimstad, Norway

Filed May 30, 1978, Ser. No. 911,042
Int. Cl.[2] F25B *43/00*
U.S. Cl. 62—138 4 Claims



1. An apparatus for producing ice comprising a compressor which via a liquid separator is supplied with cooling medium from an evaporator and which transfers compressed medium to a condenser, the condenser being connected to a liquid receiver which in turn is connected to the evaporator, the improvement comprising a first controllable valve which is connected in a communication path between the liquid receiver and the evaporator, and which during the freezing period is closed and during the thawing period is open so that condensate from the condenser is accumulated in the liquid receiver without being transferred to the evaporator during the freezing period, and a second controllable valve, which is connected in a return path between the liquid separator and the evaporator, and which is open during the freezing period and closed during the thawing period and means for controlling the first and second valves so that during the freezing period, a self-circulation of the cooling medium taking place between the liquid separator and the evaporator, and so that during the thawing period, the self-circulation of the cooling medium between the liquid separator and the evaporator is stopped and the accumulated condensate in the liquid receiver is supplied to the liquid separator via the evaporator, the condensate giving off heat to the evaporator.

4,194,368

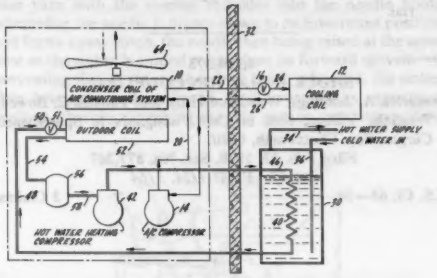
COMBINATION SPLIT SYSTEM AIR CONDITIONER AND COMPRESSION CYCLE DOMESTIC HOT WATER HEATING APPARATUS

Vijay O. Bahel, Schaumburg; Richard R. Kuehner, Mt. Prospect, and Richard H. Rosenberg, Wilmette, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 4, 1976, Ser. No. 729,503
Int. Cl.[2] F25B *27/02, 13/00, 7/00*
U.S. Cl. 62—238 5 Claims

1. The combination comprising: a split system air conditioning apparatus including a refrigerant compressor, a condenser, an expansion device and an evaporator all connected in closed circuit, series flow relation; a compression cycle system supplying thermal energy to a hot water reservoir, said system including a refrigerant compressor, a condenser, an expansion device and an evaporator all connected in closed circuit, series flow relation, said split system air conditioner condenser and

said compression cycle evaporator being in mutual heat exchange relation, including means for circulating air in series, first over said compression cycle evaporator and then over said



air conditioner condenser such that the air cooled by contact with said evaporator reduces the operating temperature of said condenser.

4,194,369

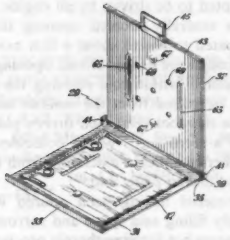
CRYOGENICALLY FROZEN PACKAGE ARTICLES

Clifford C. Faust, Riverside, and Philip F. Cilia, Bridgeview, both of Ill., assignors to Delmed, Inc., Newton, Mass.

Continuation of Ser. No. 326,062, Jan. 23, 1973, abandoned, which is a division of Ser. No. 176,214, Aug. 30, 1971, Pat. No. 3,875,754. This application Nov. 11, 1974, Ser. No. 522,877

Int. Cl.[2] F25D *3/08*

U.S. Cl. 62—371 **3 Claims**



1. A unitary package article consisting of, in combination a viable frozen fluid which has been rapidly frozen at a cryogenic temperature on the order of about −196° C., a pouch of plastic film material containing said frozen fluid disposed in a substantially uniformly flat thin layer-like cross section, and a pair of plates each having a surface respectively contiguous to respective substantially flat surfaces of said pouch, wherein at least one of the pair of plates is a foraminous plate.

4,194,370

ACCUMULATOR FOR REFRIGERATION SYSTEM

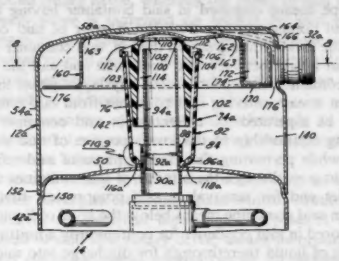
Robert L. Morse, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 846,702, Oct. 31, 1977, Pat. No. 4,147,479, which is a continuation-in-part of Ser. No. 714,050, Aug. 13, 1976, abandoned. This application Feb. 26, 1979, Ser. No. 14,967

Int. Cl.[2] F25B *43/00*

U.S. Cl. 62—503 **5 Claims**

1. In a gas-liquid separating and liquid storage device for a refrigeration system having a reservoir in which fluid is whirled about an upright axis of said reservoir, an improved gas outlet means disposed centrally of said reservoir comprising an upright tube open at the opposite ends thereof, a cup surrounding at least a portion of said tube and having an open upper end disposed near the upper end of said tube and a bottom wall joined in sealed relation to the exterior of said tube, said bottom wall having at least one liquid metering orifice extending therethrough and a cap mounted on the upper end of said cup, said cup having a top wall overlying the upper end of said tube in spaced relation therefrom with a pressure equalizing vent in said top wall communicating with



the space over said tube upper end, said cap also having a sleeve dependent therefrom extending into the annular space defined between said tube and cup with the lower end of said sleeve spaced above said cup bottom wall, said cap top wall having inlet means for communicating the reservoir with the annular space defined between said cup and said cup sleeve, the lower end of said tube serving as the gas exit from said reservoir.

4,194,371

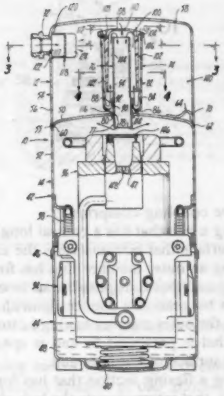
REFRIGERATION SYSTEM WITH COMPRESSOR MOUNTED ACCUMULATOR

Robert L. Morse, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 846,702, Oct. 31, 1977, Pat. No. 4,147,479, which is a continuation-in-part of Ser. No. 714,050, Aug. 13, 1976, abandoned. This application Feb. 26, 1979, Ser. No. 14,968

Int. Cl.[2] F25B *43/00*

U.S. Cl. 62—503 **5 Claims**



1. In a refrigeration apparatus having a compressor, a condenser, an evaporator, fluid conduit means forming a closed refrigerant circuit connecting said compressor, said condenser and said evaporator and including a return conduit connected to said evaporator for removing refrigerant therefrom, and pressure reducing means disposed in said circuit between said condenser and said evaporator for reducing the pressure of condensed refrigerant flowing into said evaporator, the im-

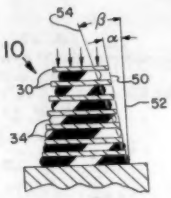
provement comprising gas-liquid separating and liquid storage means disposed in said circuit between said evaporator and said compressor including a closed container mounted on said compressor in heat exchange relationship therewith and having a fluid inlet connected to said return conduit disposed at a predetermined distance above the level of liquid to be stored in said container, an outlet conduit connected by said circuit to the suction side of said compressor comprising an upstanding standpipe means disposed in said container having an open inlet end communicating with the interior of said container above the level of liquid stored therein, said container being of sufficient height between said open inlet end and the level of liquid contained therein to permit any liquid phase in the refrigerant stream entering said container from said return conduit to be separated for collection in said container in surrounding relationship to the lower portion of said standpipe means while permitting the gaseous phase of said refrigerant stream to pass through the interior of said container and into said inlet end for removal to said compressor, first orifice means in said standpipe means below the level of liquid refrigerant stored in said container for continuously admitting small amounts of liquid therethrough for discharge into said standpipe means at a relatively slow controlled rate during operation of said compressor, and second orifice means in said standpipe means disposed in the region of said container where said gaseous phase collects and between said compressor and the portion of said standpipe means submerged in the liquid in said container for equalizing the gaseous pressures within said container surrounding said standpipe means with that in said standpipe means upon shutdown of said compressor to prevent the build-up of a sufficient pressure differential to cause any liquid contained in said standpipe means to be lifted into said outlet conduit for flow into the suction side of said compressor.

4,194,372

FLEXIBLE DRIVE COUPLING

Alan J. Hannibal, Fairview, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Dec. 26, 1978, Ser. No. 973,474
Int. Cl.[2] F16D *3/64*
U.S. Cl. 64—11 R **7 Claims**



1. A flexible drive coupling comprising:

(a) means defining a hub that has a central longitudinal axis and an outer surface that circumscribes the axis;

(b) means defining an outer member that has formed in it a central opening and that is disposed so as to circumscribe the hub and to be generally concentric with the central axis of the hub, the outer member having a circumferential inner surface that is presented to and is spaced radially from the outer surface of the hub; and

(c) means defining a flexing section that has formed in it a central opening, that interconnects the hub and the outer member, and that is disposed between and in contact with the outer surface of the hub and the inner surface of the outer member, the flexing section including a plurality of helically wound, radially alternating and juxtaposed layers of resilient material and of a substantially inextensible material, the layers of resilient material and inextensible material when viewed in section taken transversely through the layers and generally parallel to the central axis of the hub having widths that diminish with increasing radial distance from the hub, the widths of successive layers of resilient material diminishing with increasing radial distance from the hub at a faster rate than the widths of successive and intervening layers of inextensible material.

4,194,373

SHOCK ISOLATION COUPLING

Frederick A. Jennings, Woodland Hills, and Thomas C. Bowen, Westlake Village, both of Calif., assignors to Sportscoach Corporation, Chatsworth, Calif.

Filed Feb. 13, 1978, Ser. No. 877,267
Int. Cl.[2] F16D *3/14, 3/64*
U.S. Cl. 64—14 **3 Claims**

1. A shock isolating coupling for use in a drive train, said coupling comprising:

a drive plate adapted to be driven by an engine, said drive plate having a centrally located opening therein, said drive plate adpated to rotate about a first axis, said first axis passing through the center of said opening;

a driven plate located within said opening the peripheral edge of which is spaced from the wall of said opening forming a space therebetween, said driven plate adapted to rotate about a second axis which coincides with said first axis, protuberance means extending from the peripheral edge of said driven plate; and

an elastomeric material having been poured within said space completely filling said space and surrounding said protuberance means but forming therein precisely located gaps, said elastomeric material having different deflection characteristics on each side of said protuberance means due to the formation and location of said gaps.

4,194,374

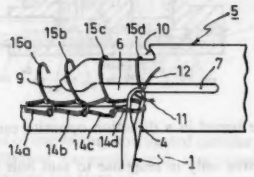
PROCESS FOR KNITTING A SINGLE-FACED PILE FABRIC

José M. D. Güell, Barcelona, Spain, assignor to Jumberca, S.A., Spain

Filed May 11, 1978, Ser. No. 904,875
Claims priority, application Spain, Jun. 3, 1977, 459450
Int. Cl.[2] D04B *9/12, 15/06*
U.S. Cl. 66—93 **1 Claim**

1. A process for knitting a single-faced pile fabric characterized in that the knitting operation is effected with sinkers each having a throat longitudinally extended at its closed end, a sloping shoulder on a lower edge of said throat and a re-entrant bevel on the leading portion of an upper edge of said throat, all supplemented by a notch on the upper edge of the sinker and in that, to develop an operative cycle, starting from the feed stage wherein the sinker is in its position of maximum withdrawal, a base yarn is laid in the sinker throat threshold and a pile yarn over the sinker by a corresponding yarnguide, the sinker is caused to move forward, thereby aiding a needle latch to introduce the base yarn in the sinker throat with the aid of

its leading re-entrant bevel and cause said yarn to penetrate deeply into the throat, while the pile yarn is placed in a needle hook above the sinker, the needle is then drawn down, starting the sinking of both yarns, while the sinker is caused to push the base yarn with the sloping shoulder into the needle hook, whereafter the needle is drawn down to its lowermost position and forms a new stitch, the needle then being raised at the same time as the sinker is caused to continue its forward movement, preventing the previous stitch from being rehooked, the sinker then being stopped until said needle reaches its uppermost position, thereby stretching the pile portion superimposed on



the base stitch at the expense of the corresponding pile loop portions extending therefrom by having made them pass over the thickest portion of the needle, and the base yarn stitches, having likewise been stretched, being caused to recover their normal length on being pulled by a take-up beam, the sinker being made to resume its forward movement, thereby pulling the pile stitch loop, hooked in the upper notch, thereby tightening the pile stitch around the needle stem, eliminating the said stretching, the needle finally being drawn down and the sinker being withdrawn backward, closing the cycle with knocking off of the pile loops from this sinker.

4,194,375

APPARATUS FOR ADJUSTING THE THREAD FEED RATE OF A CIRCULAR KNITTING MACHINE

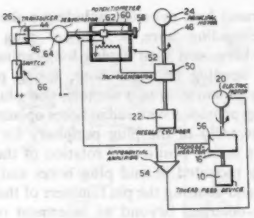
Giovanni Marchisio, Turin, Italy, assignor to Giovanni Marchisio & C. S.r.l., Rivoli, Italy

Filed May 3, 1978, Ser. No. 902,537

Claims priority, application Italy, May 18, 1977, 68132 A/77

Int. Cl.[2] D04B *15/48*

U.S. Cl. 66—132 T **3 Claims**



1. Apparatus for adjusting the rate of feed, and hence the tension of the threads of a multiple-feed circular knitting machine of the type including:

a needle actuating mechanism,

a first rotary drive for driving said needle actuating mechanism at a predetermined speed,

a plurality of thread feeds, and

a second common rotary drive for driving each of said thread feeds at a speed which is variable with respect to that of said first rotary drive, said apparatus including:

transducer means mountable on the machine to be sensitive to the tension of one of said feed threads and responsive to variations therein to generate first and second electrical signals respectively whenever the tension of said one feed thread is one of greater than and less than a predetermined value;

means controlling said second rotary drive;

means interconnecting in use said transducer means and said control means operating to feed said first and second signals to said control means;

means interconnecting in use said control means and said second rotary drive, whereby the speed of said second rotary drive is increased on receipt by said control means of said first electrical signal and decreased on receipt by said control means of said second electrical signal respectively in order to bring the tension of said threads to said predetermined value;

selective enabling means operable selectively to enable said control means whereby to bring the apparatus into operation when required; and

said second rotary drive further comprising an electric motor having an electronic speed control circuit which receives an electrical input signal dependent on the speed of said first rotary drive, means incorporated in said electronic speed control circuit for adjusting the ratio between the speeds of said first and second rotary drives and means connecting said adjusting means to said control means.

4,194,376

LEATHER PRESS

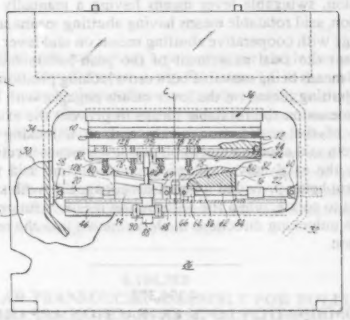
Robert K. Valks, Wetherby, and Brian W. Botham, Bradford, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Apr. 13, 1978, Ser. No. 895,740

Claims priority, application United Kingdom, Apr. 16, 1977, 15875/77

Int. Cl.[2] C14B *1/30*

U.S. Cl. 69—48 **12 Claims**



1. A machine for effecting an operation on an article, said machine comprising:

a first platen and a second platen mounted in a frame of said machine;

a first closing means for urging movement of the first and second platens relative to one another, said article being disposed therebetween; and

a second closing means for applying a predetermined pressure on said article disposed between said first and second platens;

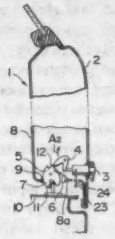
said first closing means comprising at least two wedge members having sloped surfaces in sliding engagement with a supporting surface of at least one of said platens, and wedge driving means to synchronously cause said movement of said wedge members.

4,194,377

LOCKING MEANS FOR AUTOMOBILE DOORS

Tatsuo Maeda, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 22, 1978, Ser. No. 935,867
Claims priority, application Japan, Aug. 24, 1977, 52/114006[U]
Int. Cl.[2] E05B 17/00, 33/00; E05C 3/06
U.S. Cl. 70—360 6 Claims



1. Push-button type locking means for automobile doors comprising pivotable latching means movable between a latching position wherein it is in latching engagement with striker means and an unlatching position wherein it is disengaged from said striker means, means for biasing said latching means into the unlatching position, claw means movable between an operative position wherein it is engaged with the latching means so as to hold the latching means in the latching position and an inoperative position wherein it releases the latching means so as to allow the latching means to move under the biasing force of the biasing means into the unlatching position, a lock body carrying push-button means for axial movement with respect thereto, said push-button means including rotatable means having a portion adapted to engage when the push-button means is axially depressed to cause the axial movement thereof with said claw means to force the latter into the inoperative position, swingable lever means having a manually actuable portion, said rotatable means having abutting means adapted to engage with cooperative abutting means on said lever means to prevent the axial movement of the push-button means, said lever means being movable between a locking position wherein the abutting means on the lever means engages with the abutting means on the rotatable means to prevent the axial movement of the push-button means and an unlocking position wherein said abutting means on said lever means is retracted to allow the axial movement of the push-button, said rotatable element being provided with means engageable with said lever means to rotate, when the push-button means is rotated by the key in unlocking direction, the lever means into the unlocking position.

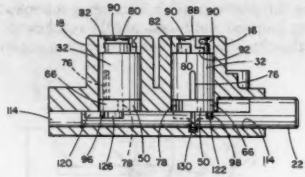
4,194,378

COMBINATION LOCK EXTRACTION APPARATUS

David L. Swindler, Franklin, and Donald W. Selby, Oxford, both of Ohio, assignors to Square D Company, Palatine, Ill.

Filed Jan. 26, 1978, Ser. No. 872,410
Int. Cl.[2] E05B 27/08
U.S. Cl. 70—363 24 Claims

1. A combination comprising
a plurality of combination lock cylinders,
a selected housing for each lock cylinder,
a common bolt for said lock cylinders having a selected position,
a respective tumbler barrel carried by each lock cylinder and adapted to receive a respective operating key,
a plurality of axially movable tumbler pins carried by each lock cylinder to prevent rotation of a respective tumbler barrel and movement of said bolt from said selected position, said pins moved along the axis of a respective cylinder by a respective received operating key to enable initial rotation of a respective tumbler barrel in a respective initial direction for controlling said bolt to enable movement of said bolt from said selected position, each lock cylinder also adapted to receive a lock cylinder extraction key common to each cylinder for axially moving said pins to enable initial rotation by said extraction key of the



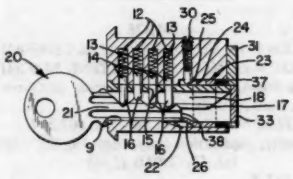
respective barrel in a direction opposite each respective direction,
means effective only in response to said bolt being in said selected position for enabling initial rotation of the respective barrel by said extraction key only in a direction opposite the respective direction and for enabling extraction of the respective lock cylinder from the selected housing.

4,194,379

PICK-PROOF LOCK

Harry E. Dice, Sr., Silver Spring, Md., assignor to George K. C. Hardesty, Mayo, Md., a part interest

Filed Apr. 12, 1978, Ser. No. 895,708
Int. Cl.[2] E05B 63/00
U.S. Cl. 70—421 5 Claims



1. A key operated lock cylinder including a shell having a longitudinally extending bore, a cylinder plug rotatively mounted in said bore, said shell having longitudinally spaced parallel sockets opening into said bore, spring pressed pin tumblers slidably mounted in said sockets, said plug having a keyway and being provided with radial bores opening into said keyway and outwardly of the plug periphery for alignment with said sockets in one position of rotation of the plug, pin tumblers slidably mounted in said plug bores and extending into the keyway and abutting the pin tumblers of the shell; said shell bore being enlarged beyond an innermost one of said sockets, a rotation limiting pin mounted radially in said shell and extending into said enlarged bore portion in close proximity to a part of the periphery of the plug, a collar slidably mounted on said plug within said enlarged bore portion and having a notch opening outwardly of the forward end thereof in which said rotation limiting pin is received, a compression spring carried by the plug within said enlarged bore portion and bearing against and urging the collar in a forward direction, said collar having a finger projecting into the keyway for non-rotatably connecting the collar to the plug, and a key having a blade notched to cause the pin tumblers to assume unlocked positions and having a forward end for engaging said finger to move said collar rearwardly and out of engagement with the pin to permit the key to rotate the plug within the shell to effect unlocking of the lock.

4,194,380
CORRUGATED ELLIPTICAL WAVEGUIDE WITH PERMANENT TWIST

Fred Brown, Calumet City, and Anthony D. Vinezeano, Markham, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Division of Ser. No. 811,053, Jun. 29, 1977, Pat. No. 4,144,510.
This application Nov. 24, 1978, Ser. No. 963,389
Int. Cl.² B21D *11/14*
U.S. Cl. 72—64 **6 Claims**

1. A method of converting corrugated circular waveguide to corrugated elliptical waveguide with a permanent twist, said method comprising the steps of

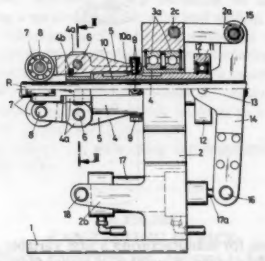
(a) passing a single, unitary, fluid-impervious corrugated circular waveguide between a pair of forming tools defining an elliptical cross-sectional opening for converting the circular waveguide passed therethrough to elliptical waveguide, and

(b) gripping a preselected portion of the corrugated waveguide and turning that portion of the waveguide around its axis while the waveguide is being passed between said forming tools to form a permanent twist in the elliptical waveguide.

4,194,381
DEVICE FOR THE COLD WORKING OF HEAT EXCHANGER TUBING FOR THE ATTACHMENT OF SPIRAL FINS

Alfred Joekel, Essen-Werden, Fed. Rep. of Germany, assignor to Balcke-Durr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Division of Ser. No. 709,130, Jul. 27, 1976, Pat. No. 4,103,408.
This application Jul. 10, 1978, Ser. No. 923,170
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1975, 2534217
Int. Cl.² B21D *17/04*
U.S. Cl. 72—100 **7 Claims**



1. A device for the cold rolling of one or more narrow longitudinal lands on the cylindrical outer surface of a rotating length of smooth round tubing, which device is designed for use in conjunction with a machine for the production of finned heat transfer tubing, where one or more continuous metal strips are wound onto said tubing, the device comprising in combination:

a console adapted for mounting on said fin winding machine, at a fixed distance from a point where the continuous metal strips are wound around the tubing, the console reaching across the rotational axis of said length of tubing and forming a large journal bore with which it surrounds the tubing concentrically;

a hollow supporting spindle rotatably mounted in the journal bore of the console, so as to extend in concentric alignment with the tubing;

at least two cooperating pressure rollers mounted on the supporting spindle, and at least one of them having a surface profile for the cold rolling of said land, the rollers being adapted to roll axially along the tubing, while revolving with the latter as a result of the rotatability of the supporting spindle;

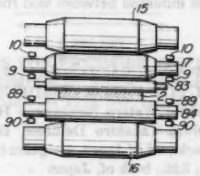
means for adjusting the cold rolling pressure by adjusting the transverse distance between the cooperating rollers; and

means for selectively interrupting the cold rolling action of the pressure rollers on the rotating length of tubing, for the preservation of certain length portions of tubing without lands.

4,194,382
ROLLING MILL

Toshiyuki Kajiwara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1977, Ser. No. 851,203
Claims priority, application Japan, Nov. 26, 1976, 51/141141; Mar. 14, 1977, 52/27054
Int. Cl.² B21B *29/00, 35/12, 31/32*
U.S. Cl. 72—243 **32 Claims**



1. A rolling mill comprising a pair of upper and lower work rolls defining therebetween a nip for material to be rolled, upper and lower backup rolls respectively backing said upper and lower work rolls, an intermediate roll interposed in at least one of positions between said upper work and the lower backup roll, said intermediate roll having a diameter and rigidity greater than the diameter and rigidity of the adjacent one of said work rolls and having a diameter less than the diameter of the backup rolls, and means associated with said intermediate roll to apply bending forces on the same.

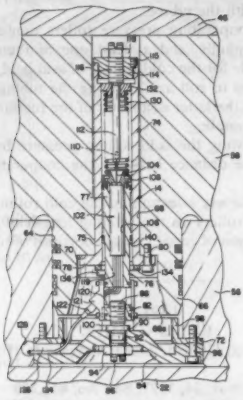
4,194,383
MODULAR TRANSDUCER ASSEMBLY FOR ROLLING MILL ROLL ADJUSTMENT MECHANISM

Paul Huzyak, Salem, Ohio, assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 917,964
Int. Cl.² B21B *37/08*
U.S. Cl. 72—245 **23 Claims**

1. A modular transducer assembly for mounting between relatively reciprocable first and second members of a roll mill gap adjusting mechanism comprising, linearly extendable and retractable housing means having opposite ends in the direction of extension and retraction, transducer means including first and second transducer components supported in said housing means each with respect to one of said opposite ends for displacement relative to one another in said direction and in response to extension and retraction of said housing means, means mounting said housing means between said first and second roll mill members with said opposite ends exposed with respect thereto and for said housing means to extend and re-

tract in response to relative reciprocation of said roll mill members, said first and second transducer components having a null position with respect to one another, and means at each



of said opposite ends of said housing means for adjusting the corresponding one of said first and second transducer components relative to the other to obtain null positioning when said housing means is mounted between said roll mill members.

4,194,384

METHOD OF MANUFACTURING HEAT-TRANSFER WALL FOR VAPOR CONDENSATION

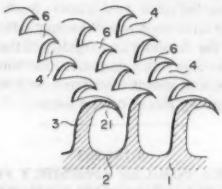
Kunio Fujie, Tokyo; Wataru Nakayama; Heikichi Kuwahara, both of Kashiwa; Takahiro Daikoku, Ibaraki, and Kimio Kakizaki, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of, Japan

Division of Ser. No. 647,787, Jan. 9, 1976, abandoned. This application Jun. 8, 1978, Ser. No. 913,823

Claims priority, application Japan, Jan. 13, 1975, 50-5626; Sep. 22, 1975, 50-114479

Int. Cl.[2] B21D *53/06*

U.S. Cl. 72—325 **8 Claims**



1. A method of manufacturing a heat-transfer wall for vapor condensation in such a way that hot vapor is condensed by contact with the wall surface at a low temperature, the method comprising the steps of:

(a) forming, on the heat-transfer surface, a number of shallow grooves substantially in parallel at a pitch of not more than one millimeter between the grooves; and

(b) forming, on the heat-transfer surface and in the direction across said shallow grooves formed in the step (a), a number of grooves not more than two millimeters in depth and deeper than the grooves formed in the step (a) and also forming ridges severed by said deep grooves and not more than two millimeters in depth as measured from the bottoms of said deep grooves, each said ridge having a sharply tapered edge and a number of notches with sharp, tapering edges and inclined bottoms, by cutting and turning up the heat-transfer surface in the plowing manner, or by cutting at an angle to the surface to turn up the material upright, through the relative movement of said heat-transfer surface and/or the plowing tool across said shallow grooves.

4,194,385

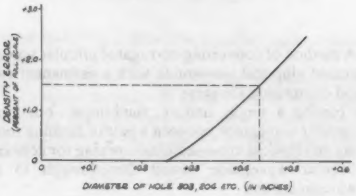
DENSITOMETER CALIBRATION METHOD

Milton H. November, Hacienda Heights, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,179

Int. Cl.[2] G01N *9/00*

U.S. Cl. 73—1 R **5 Claims**



5. The method of calibrating a densitometer, said method comprising the steps of: determining a hole diameter of a vibration densitometer probe; determining the hole size function of density error of a vibration densitometer; and tailoring a production unit hole by reboring the hole thereof in accordance with the diameter indicated by the said function at the determined density error of the production unit to reduce said error toward zero.

4,194,386

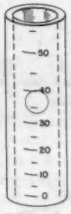
VARIABLE AREA METERING TUBE AND METHOD OF MANUFACTURE

E. Craig Waters, Lansdale, Pa., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 17, 1978, Ser. No. 896,656

Int. Cl.[2] G01F *25/00*

U.S. Cl. 73—3 **1 Claim**



1. In a process for manufacturing a first variable area metering tube on a first mandrel machined to conform to a second mandrel, said second mandrel being substantially free of dimensional and surface irregularities and being useful to produce a second metering tube which is substantially free of variations in its cross-sectional flow area and for which a calibration curve is prepared which in combination with a linear graduated scale applied to said second tube indicates the fluid flow rate through said second tube, said first mandrel having dimensional or surface irregularities such that said first tube made thereon has variations in its cross-sectional flow area which preclude application thereto of a linear graduated scale to indicate in combination with said calibration curve for said second tube the fluid flow rate through said first tube, the

improvement of applying a non-linear graduated scale to said first tube, wherein said non-linear scale compensates for said variations in the cross-sectional flow area of said first tube and readings from said non-linear scale are capable of translation into fluid flow rates through said first tube from said calibration curve for said second tube, which comprises:

(a) creating a known fluid flow rate through said first tube;

(b) marking the float position on said first tube at said known flow rate;

(c) determining the scale reading corresponding to said known flow rate from said calibration curve for said second tube;

(d) marking said first tube with said scale reading opposite the float position at said known flow rate; and

(e) repeating steps (a)-(d) sequentially over a predetermined range of flow rates through said first tube to thereby apply said non-linear scale to said first tube.

4,194,387

TESTING APPARATUS

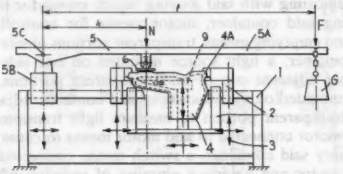
Rupert Hofbauer, and Josef Svoboda, both of Schwechat, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Jul. 26, 1978, Ser. No. 928,167

Claims priority, application Austria, Aug. 16, 1977, 5902/77

Int. Cl.[2] G01N *19/02*

U.S. Cl. 73—9 **6 Claims**



1. A testing apparatus for determining the sliding characteristics of a ski boot sole, comprising:

a frame;

fastening means for fastening a ski boot to said frame;

a sliding piece means for engaging a part of said boot sole to be tested;

first load applying means mounted on said frame for applying a first load force to said sliding piece and in a first direction perpendicular to the surface of said boot sole;

second load applying means mounted on said frame for applying a second load force to said sliding piece and in a second direction parallel to said surface of said boot sole, said second load applying means including an electric motor having a rotary output and first means for converting said rotary output to a linear movement, said sliding piece means being operatively secured to a linearly movable part of said first means; and

measuring means for measuring the magnitude of said second load force.

4,194,388

CAN TESTING DEVICE

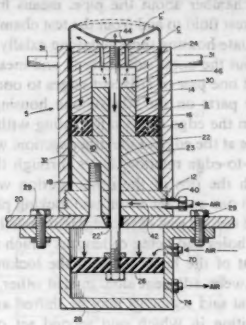
Thomas A. Mack, Valparaiso, Ind., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 18, 1978, Ser. No. 970,682

Int. Cl.[2] G01M *3/32*

U.S. Cl. 73—37 **16 Claims**

1. A can end buckle-testing device of the type described comprising the combination of a mandrel means for receiving an open ended can body, a ring-like sealing member of elastic compressible material arranged on said mandrel means so as to encompass a selected portion of the outer part of the mandrel means, a selectively controlled piston means slidably disposed relative to the mandrel means for compressing the sealing member and for forcing the sealing member into contact with the inside of the wall of a can body disposed on the mandrel means, means including piping and valve means for selectively introducing fluid under pressure into and through the mandrel means and into the interior of the sealed can body disposed on said mandrel means and intermediate the sealing member and



the end of said can body during compression of the sealing member, and fluid source means connectable simultaneously both to said piston means and said valve means so as to effect introduction of pressure testing fluid into the interior of the can body and against the end thereof simultaneously with the maintenance of the compression of the sealing member.

4,194,389

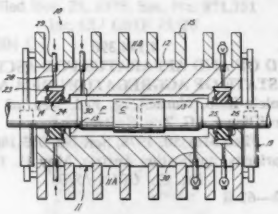
APPARATUS FOR PRESSURE TESTING PIPE

Jerry D. Laging, Apartado 88, Anaco, Venezuela

Filed Mar. 20, 1978, Ser. No. 888,238

Int. Cl.[2] G01M *3/28*

U.S. Cl. 73—46 **22 Claims**



1. Apparatus for use in pressure testing a section of pipe, comprising a hollow housing including arcuate sections each having a curved side wall and end walls at opposite ends of the side wall, the inner edge of each end wall having a recess to fit closely about the pipe at one end of the section to be tested when adjacent housing sections are disposed about the pipe section in edge-to-edge relation, means for releasably locking the housing sections in edge-to-edge relation when so disposed, each housing section having a continuous groove formed in the edges of the ends and side walls thereof, a seal strip carried within each groove for engaging a corresponding seal strip in the groove of an adjacent section and for engaging about the pipe at each end of the section to be tested so as to sealably enclose a test chamber about said pipe section, and means for admitting and exhausting test fluid to and from said test chamber.

6. Apparatus for use in pressure testing a section of pipe, comprising a hollow housing including arcuate sections each having a curved side wall and end walls at opposite ends of the side wall, the inner edge of each end wall having a recess to fit closely about the pipe at one end of the section to be tested, means hingedly connecting the housing sections to one another

except at one pair of adjacent edges, so that they may be swung between a closed position about the pipe in which they are disposed in edge-to-edge relation, and an open position to receive said pipe section between said one pair of adjacent edges, and means on the housing sections for sealably enclosing a test chamber about the pipe, means for admitting and exhausting test fluid to and from the test chamber, the side wall of each arcuate housing section having axially spaced reinforcing ribs about the outer side thereof, and means for releasably locking said one pair of adjacent edges to one another including locking parts on the ribs of one housing section which project from the edge thereon for fitting within slots between adjacent ribs at the edge of the other section, when the sections are in edge-to-edge relation, holes through the locking parts and through the ribs of the other section which are axially aligned with one another when said locking parts are so fitted, and first and second sets of rod segments axially slidable within the aligned holes and being of lengths which are substantially equal to that of the holes through the locking parts and the distance between adjacent slots in said other section, respectively, so that said segments may be shifted axially between a locking position in which said second set of rod segments extend through said locking parts and ribs on said other housing section on opposite sides of the slot in which said locking parts are received, and an unlocking position in which said second set of segments extend through holes in ribs on each side of the slots and the first segments are disposed within the holes in the locking parts.

4,194,390

METHOD OF AND APPARATUS FOR ASCERTAINING THE STATE OF AGGREGATION OF A MEDIUM

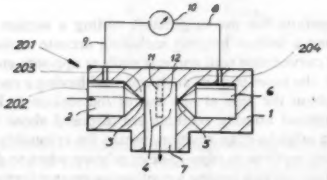
Hans Deinlein-Kalb, Nuremberg, Fed. Rep. of Germany, assignor to Klinger AG, Zug, Switzerland

Filed May 10, 1978, Ser. No. 905,180

Claims priority, application Austria, May 11, 1977, 3382/77

Int. Cl.[2] G01N *15/06*

U.S. Cl. 73—61 R **7 Claims**



1. A method of ascertaining the state of aggregation of a medium, said method comprising directing a flow of the medium to a first of a series of at least two coaxially arranged nozzles, arranging the nozzles so that the flow from the first nozzle will proceed unimpaired towards the second nozzle, comparing the initial pressure of said medium upstream of said series of nozzles with a further pressure prevailing in a closed space arranged downstream of the first nozzle, and correlating any correspondingly appearing differential pressure as a measurement value for indication of the state of aggregation of the medium.

4,194,391

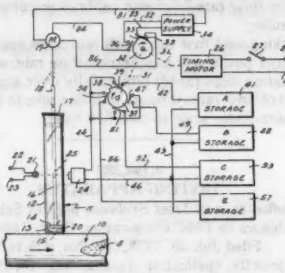
DEVICE FOR DETERMINING SETTLING RATES OF SOLIDS OR PARTICULATE BEARING LIQUID IN A CONTINUOUS PROCESS OR FLOWING STREAM

Roy R. Rosenberger, Wheaton, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Oct. 3, 1977, Ser. No. 838,752

Int. Cl.[2] G01N *15/04*

U.S. Cl. 73—61.4 **6 Claims**



1. Apparatus for determining the settling rates of solids or particulate in moving liquid comprising a container fluidly communicating with said moving liquid, means for filing and emptying said container, motor means for controlling said filing and emptying means, transparent portions of side walls of said container, a light source mounted on one side of said container adjacent one of said transparent portions, a light sensor mounted on the opposite of said container adjacent the other transparent portion to measure light transmissivity, a timing motor connected to said motor means to cause it to fill and empty said container, a switch means connected to said timing motor and having a plurality of switches which are closed at different times by said timing motor, one side of said light sensor connected to one terminal of each of said plurality of switches, a plurality of storage means with first input terminals connected to the other side of said light sensor, a second terminal of each of said plurality of switches respectively connected to second input terminals of each of said plurality of storage means, a first subtractor receiving input signals from a first and a second of said plurality of storage means and subtracting said signals, a first time signal generator supplying an output signal proportional to the difference in times when the transmissivity signals were supplied to said first and second storage means, a first divider receiving the outputs of said first subtractor and said first time signal generator and dividing the subtractor signal by the time signal, and a first indicator receiving the output of said first divider to indicate the settling rate.

4,194,392

MEASURING ADHESIVE FORCE

Serge Lombard, Les Ulis, and Patrick Borg, Rueil Malmaison, both of France, assignors to ATO Chimie, Courbevoie, France

Filed May 12, 1978, Ser. No. 905,150

Claims priority, application France, Jun. 10, 1977, 77 17808; Jan. 10, 1978, 78 00495

Int. Cl.[2] G01N *3/08*

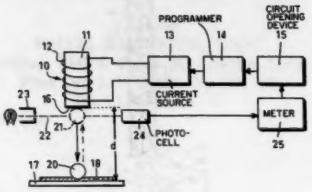
U.S. Cl. 73—150 A **10 Claims**

1. A method for determining the adhesive power of a supported pressure sensitive adhesive which comprises:

(a) dropping a ball from a predetermined starting point at a given time, onto the surface of a pressure sensitive adhesive coated support, placed in a horizontal plane at a predetermined distance below the starting point, to cause said ball to become adherent to said adhesive;

(b) subsequently applying a preprogrammed vertical, upwardly directed monotonically increasing separating pulling force at a first rate to the ball to successively balance the weight of the ball, and thereafter at a second rate less

than said first rate to overcome the adhesion force exerted by the adhesive and return the ball to the initial starting point thereof at a subsequent time, the adhesive power of said adhesive being a function of the time interval between



the dropping of the ball and return of the ball to said initial starting point; and

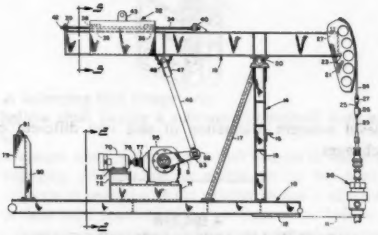
(c) generating a signal having a value corresponding to the interval between said given and subsequent times.

4,194,393

WELL DRIVING AND MONITORING SYSTEM

Robert E. Boley, Massillon, Ohio, assignor to Stallion Corporation, Massillon, Ohio

Filed Apr. 13, 1978, Ser. No. 896,046
Int. Cl.[2] G01L *3/14*
U.S. Cl. 73—151 **11 Claims**



1. A well driving system comprising a prime mover and a transmission, said transmission including a shaft subject to axial movement in response to well loads, a transducer mounted on said shaft within said transmission, means to employ the signal produced by said transducer to monitor such well loads, said transmission being a worm gear transmission and said shaft being the worm shaft, said transmission including a worm wheel in mesh with the worm and secured to an output shaft projecting laterally symmetrically on each side of said transmission, cranks connected to each end of said output shaft, each crank including a tapered hub, a mating tapered bushing secured to each end of the output shaft, and screw means securing said hub and bushing together.

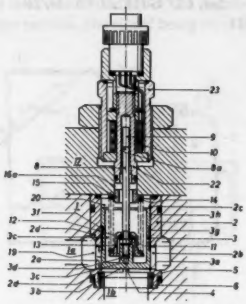
4,194,394

FLOW METER

Reiner Bartholomäus, Neuendorf, Fed. Rep. of Germany, assignor to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed May 15, 1978, Ser. No. 905,869
Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722239
Int. Cl.[2] G01F *1/28*
U.S. Cl. 73—207 **10 Claims**

1. In a flow meter, a combination comprising: a housing defining a fluid inlet passage and a fluid outlet passage; a piston arranged in said housing for reciprocating movement between said passages, said piston defining a jacket surface, a base surface and a control edge between the two surfaces, said control edge and said jacket surface being arranged for controlling the opening of said passages during the movement of the piston; spring means biasing said piston into a zero flow position in which the piston closes the communication between said passages; flow distributing means arranged between the passages for adjusting the flow rate of the fluid in response to the movement of said piston, and including a sleeve attached to



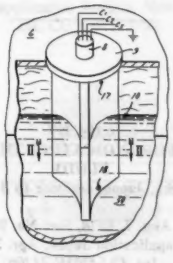
said piston and projecting into said fluid inlet passage, said sleeve being provided with a plurality of slots for passing the fluid from said inlet passage into said outlet passage; and an electrical position detector coupled with the piston to generate an electrical signal proportional to the displacement of the piston.

4,194,395

CAPACITIVE LIQUID LEVEL SENSOR

Tony J. Wood, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1978, Ser. No. 971,751
Int. Cl.[2] G01F *73/26*
U.S. Cl. 73—304 C **20 Claims**



1. A capacitive fuel sender mounted in a fuel storage tank for sensing the level of fuel over a predetermined height range comprising:

a cylindrical housing, extending along a line perpendicular to the expected level of said fuel in said storage tank, being formed of an electrically conductive material and defining a common capacitive plate;

a plurality of capacitive plates within said housing extending parallel to said line and being continuously separated over said predetermined height range; and

a dielectric between said plates including air above said fuel level and fuel at said level and below; wherein said sender includes a plurality of capacitors; and

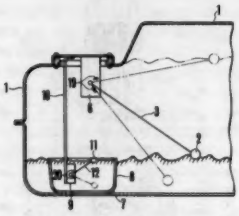
said capacitive plates within said housing define the individual ones of said plurality of said capacitors each in combination with said common capacitive plate.

4,194,396

AUTOMOBILE FUEL GAUGE SYSTEM

Eiji Ohsawa, Ebina, and Yoshiro Yoshikawa, Hiratsuka, both of Japan, assignors to Nissan Shatai Co., Ltd., Japan

Filed Jun. 27, 1978, Ser. No. 919,447
Claims priority, application Japan, Jul. 7, 1977, 52-89145[U]
Int. Cl.[2] G01F *23/06, 23/10*
U.S. Cl. 73—311 3 Claims



1. An automobile fuel gauge system comprising:

a main sensor unit for a main indicating system in a fuel tank;

an auxiliary chamber fixedly provided at the bottom of the fuel tank and having a hole at its lower side to provide a fuel passage from said tank into said auxiliary chamber, an auxiliary sensor unit and an auxiliary indicating system being provided in said chamber, and dial means comprising a main dial section connected to said main sensor unit to indicate the amount of fuel in said tank and an auxiliary dial section connected to said auxiliary sensor unit to provide electric signals to said auxiliary indicating system to indicate the amount of fuel in said tank only when the level of fuel in said tank is below the level of fuel necessary to drive said auxiliary sensor unit to its maximum fuel position.

4,194,397

APPARATUS FOR INDICATING THE LEVEL OF A FLUID

Mieji Yasuda, Osaka, Japan, assignor to Junzo Ozaki, Osaka, Japan

Filed Aug. 7, 1978, Ser. No. 931,548
Claims priority, application Japan, Apr. 21, 1978, 53-48076
Int. Cl.[2] G01F *23/06*
U.S. Cl. 73—314 6 Claims

1. An apparatus for indicating the level of the surface of a fluid in a tank comprising:

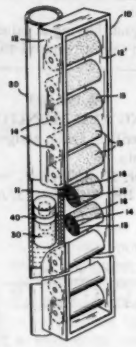
a vertically disposed non-magnetic column coupled to said tank such that fluid in said tank flows into said column;

a non-magnetic level indicator housing provided adjacent said column;

a plurality of horizontally disposed magnetic rotors rotatably coupled to said housing each of said rotors comprising a cylindrical magnet having one half of a one magnetic polarity and another half of another magnetic polarity and having an end face divided in half into two different colors, each of said color halves covering one quarter of each half of said cylindrical magnet of different polarities;

a cylindrical float provided in said column; and

a magnetic member provided in said float; whereby each of magnetic rotors is rotated one half revolution by said magnetic member in said float when said float passes by each of said magnetic rotors to indicate said level as a



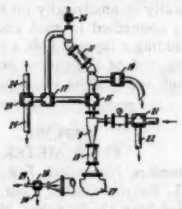
level wherein orientation of said two different colors changes.

4,194,398

SIGHT GLASS AND SAMPLING SYSTEM

Edward A. Gastrock, Metairie, La., assignor to Charles L. Stewart, Glencoe, Ill. and Gastrock Protein Corporation, Metairie, La.

Division of Ser. No. 721,203, Sep. 8, 1976, Pat. No. 4,139,646.
This application Nov. 13, 1978, Ser. No. 960,095
Int. Cl.[2] G01N *1/10*
U.S. Cl. 73—422 TC 3 Claims



1. A sight glass and sampling system for the output of a liquid processing device including:

a sight glass connected to the outlet of said liquid processing device.

a first three-way valve controlling the flow from the outlet of said liquid processing device to the inlet of said sight glass,

a second three-way valve controlling the outlet from said sight glass,

a valve controlled sample conduit connected between said first and second three-way valves, and

a by-pass conduit connecting said first and second three-way valves and controlled by said valves.

4,194,399

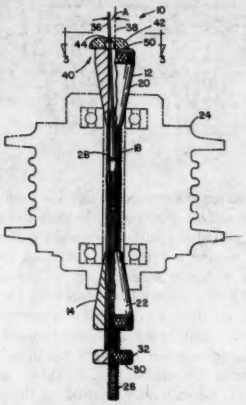
WHEEL BALANCING TOOL

E. Robert Wilson, 5745 S. Huron St., Littleton, Colo. 80120

Filed Oct. 5, 1978, Ser. No. 948,966

Int. Cl.[2] G01M 1/12

U.S. Cl. 73—486 **9 Claims**



1. A balancing tool comprising:

a hollow shaft having a substantially smooth bore and an axis;

two spaced adapter means attached coaxial to the shaft for engaging portions of an article to be balanced, and wherein at least one of the adapter means is adjustable to desired axial positions along portions of the hollow shaft;

a rod means having a first end portion substantially coaxially disposed within the bore of the hollow shaft and having a second portion extending from the bore of the hollow shaft, said first end portion slidably axially movable in portions of the bore and defining a suspension point substantially coincident with the shaft axis;

a stop means adjustable axially along an extending portion of the rod means for maintaining the suspension point of a desired position in the bore;

a bushing between the shaft and first end portion to help hold the rod in position as the stop means is adjusted;

a suspension member extending into the hollow shaft and attached to the rod means at the suspension point and substantially coincident with the hollow shaft axis; and

indicator means for showing a relative position between the suspension member and the hollow shaft.

4,194,400

ULTRASONIC INSPECTION METHOD

Bonner W. Staff, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 21, 1977, Ser. No. 862,791

Int. Cl.[2] G01N 29/04

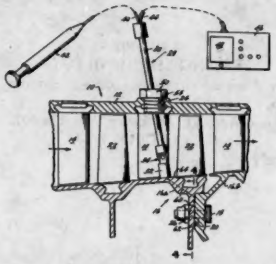
U.S. Cl. 73—623 **3 Claims**

1. In a method for the ultrasonic examination for a defect in the vicinity of a hole in a portion of a member while the member is assembled in an article which includes an outer wall having an access port available to a surface of the member, the member portion being inaccessible to straight line ultrasonic signals within the member from said member surface, the steps of:

providing a predetermined normal ultrasonic signal form associated with the member portion and the hole;

placing a face of an ultrasonic transducer through the access port and into operating position at the member surface;

activating the transducer to direct a first ultrasonic signal within the member through the member surface and toward at least one boundary of the member remote from the member portion, the signal being directed along a path



within the member in respect to the boundary and the member portion such that the first signal is deflected from the boundary toward the member portion;

receiving from the member portion, through the transducer, a second ultrasonic signal which is a reflection of the first signal; and then,

comparing the form of the second signal with the predetermined normal signal form to examine for the presence of a defect in the member portion.

4,194,401

TRANSDUCER FOR MEASURING THE INTERNAL PRESSURE IN PIPES

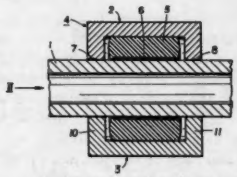
Peter Claassen; Rudolf Zeiringer, and Helmut List, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Nov. 9, 1978, Ser. No. 959,213

Claims priority, application Austria, Nov. 11, 1977, 8099/77

Int. Cl.[2] G01L 9/04

U.S. Cl. 73—730 **12 Claims**



1. A transducer device for measuring the internal pressure in a pipe by detecting deformations in the outer surface thereof, such as an injection pipe feeding fuel to a diesel engine, comprising a rigid housing for enclosing the pipe whose outer surface deformation is to be measured, and at least one elastic sensor element having a surface capable of contact with the outer surface of said enclosed pipe, said sensor element being capable of stretching due to deformation of said pipe due to frictional contact therewith, said sensor element being located inside said housing and adjacent to at least a part of the outer surface of the pipe, means for fixedly mounting said rigid housing on the pipe such that said sensor element can contact the outer surface of said enclosed pipe, and an elastic endorsing element positioned between the rigid housing and the sensor element for elastically forcing the sensor element against the outer surface of the enclosed pipe, the deformation of the pipe

resulting from pressures therein being transmitted frictionally to the sensor element.

4,194,402

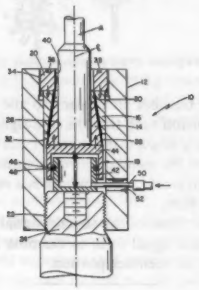
TESTING MACHINE GRIP

Joseph P. De Nicola, Hingham, Mass., assignor to Instron Corporation, Canton, Mass.

Filed Aug. 31, 1978, Ser. No. 938,697

Int. Cl.² G01N *3/04*

U.S. Cl. 73—859 **6 Claims**



1. In a materials testing machine of the type having
a pair of grips for gripping two ends of a test specimen,
power means for applying loads to said test specimen through said grips, and
control means for controlling said power means,
the improvement wherein each of said grips comprises:
a housing,
at least first and second wedge members positioned in said housing,
each of said wedge members having an aperture therethrough, the aperture of said first wedge member positioned for receiving a test specimen and said first wedge member having a gripping surface defining its said aperture, and the aperture of said second wedge member positioned for receiving said first wedge member, said wedge members being movable with respect to each other and each of said wedge members having an inclined portion directed oppositely to the inclined portion of said other wedge member, and
means for preloading said wedge members to cause them to move with respect to each other,
wherein said wedge members are annular,
wherein said apertures are circular in cross section,
wherein said aperture of said first wedge member and said gripping surface are cylindrical, said first wedge member has a frustoconical outer shape, said aperture of said second wedge member is frustoconical in shape and is directed axially oppositely to said inclination of said first wedge member's outer shape, said second wedge member has a cylindrical outer shape, said housing has a cylindrical bore for receiving said second wedge member,
wherein said first wedge member is longitudinally split,
whereby said wedge members interact to exert a gripping force on said test specimen through said first wedge member's gripping surface.

4,194,403

PUSH-BUTTON OPERATED DEVICE FOR STORING A PLURALITY OF POSITIONS OF A MOVABLE MEMBER

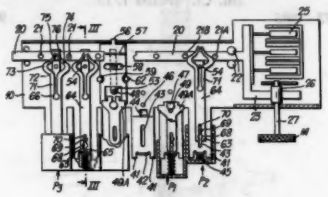
Giovanni Santoro, Rome, Italy, assignor to Werbetronic AG, Maureen Liechtenstein, Italy

Filed Jun. 21, 1977, Ser. No. 808,625

Claims priority, application Italy, Jun. 25, 1976, 50161 A/76; May 18, 1977, 49462 A/77

Int. Cl.² F16H *35/18*

U.S. Cl. 74—10.33 **12 Claims**



1. A push button controlled device for storing a plurality of positions of a movable member thereof, the position of said member controlling the variable condition of a second device mechanically connected thereto, and said positions of said movable member being preselected through said push buttons and selected by the latter when depressing the corresponding push button, said device comprising: a supporting plate said movable member (20) being slidingly supported on the plate and said movable member having a plurality of pairs of pins mounted thereon for enabling selection of said positions; a control unit (M) for manually controlling the positions of said movable member; a friction device allowing relative movements between said movable member and said manually operated control unit; and a plurality of storing and selecting units provided with said push buttons and having means for storing and selecting said positions of said movable member, said means being adapted to cooperate with said plurality of pairs of pins of said movable member.

4,194,404

CRANK ASSEMBLY FOR RECIPROCATING PISTON MACHINES

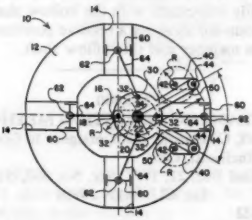
Valentin Jager, deceased, late of Darmstadt, Fed. Rep. of Germany, and by Klara B. E. Jager, heir, Saalbaustrasse 40, D-6100 Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 744,468, Nov. 24, 1976, abandoned. This application Jul. 12, 1978, Ser. No. 923,919

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554687

Int. Cl.² F16H *21/22*

U.S. Cl. 74—44 **12 Claims**



1. In a machine of the type having a body, a crankshaft journaled by the body for rotation about a crankshaft axis, a crank pin carried on the crankshaft, and a plurality of connecting rods, a crank assembly for drivingly coupling the connecting rods to the crank pin, comprising:

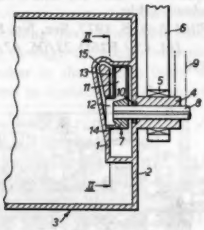
(a) an articulation member journaled on the crank pin for movement about the axis of the crank pin;
(b) connection means for pivotally connecting the connecting rods to the articulation member;
(c) constraining means interconnecting the articulation member and the body of the machine for confining freedom of movement of the articulation member and for preventing it from rotating as it travels with the crank pin in a circular path about the crankshaft axis;
(d) the constraining means consisting of two auxiliary cranks each having one shaft portion journaled by the body for rotation about a separate auxiliary crank axis, and another shaft portion journaled by the articulation member for movement relative to the body portion about a separate auxiliary shaft portion axis;
(e) the distances between the axes of the shaft portions of each auxiliary crank being equal to the distance between the axes of the crankshaft and the crank pin; and,
(f) the crankshaft axis, the crank pin axis, the auxiliary crank axes and the auxiliary shaft portion axes extending in parallel relationship and being arranged such that all of these axes do not extend in a common plane at anytime during rotation of the crankshaft.

4,194,405

VIBRATOR DEVICES

Lionel A. Reynolds, Maryhill, Cheltenham Rd., Painswick, Stroud, England

Filed Jun. 26, 1978, Ser. No. 918,956
Claims priority, application United Kingdom, Jul. 23, 1977, 31037/77; Dec. 7, 1977, 50836/77
Int. Cl.[2] F16H *33/10*
U.S. Cl. 74—87 **10 Claims**



6. A device according to claim 5, wherein an out-of-balance mass the rotation of which produces a vibratory force transmitted to the casing by said fluid pressure consists entirely of the fluid contained in the rotor and which the swept surface of the casing, and means to control the magnitude of the vibratory force comprise a restrictor valve through which said cavity is supplied to make up fluid leakage at the tip of the rotor between the rotor and the casing, the restrictor valve being adjustable to vary the mass of fluid in the cavity.

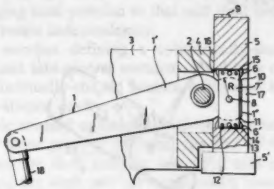
4,194,406

LEVER MECHANISM

John Böhlmark, Mora, Sweden, assignor to F M Mattsson Aktiebolag, Mora, Sweden

Filed Mar. 6, 1978, Ser. No. 883,924
Claims priority, application Sweden, Mar. 17, 1977, 7703074
Int. Cl.[2] F16H *21/44*
U.S. Cl. 74—110 **3 Claims**

1. A lever mechanism comprising a lever (1) which is pivotally mounted between its ends on a pivot shaft (2) and one lever arm (1') of which lever is arranged to have a force applied thereto while the other lever arm (1'') of which lever has an end portion arranged to transmit, via two mutually opposed part-cylindrical surfaces (10, 11), movement and force to a working element (5) adapted to be moved along a guide means (9) carrying said working element in response to movement of the lever, characterised in that cooperating with respective part-cylindrical surfaces (10, 11) on said end portion is a part-cylindrical surface on a slide block (6) having the same radius as the part-cylindrical surface cooperating with said end portion, said slide block having remote from its part-cylindrical surface a planar slide surface (15) which is parallel with the



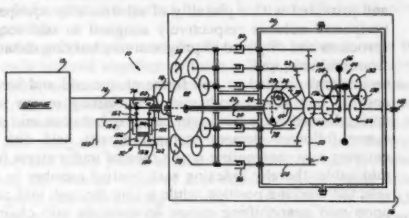
shaft of the part-cylindrical surface of the slide block and which planar slide surface is arranged to slidably abut a planar surface (16) on said working element (5); and in that the two slide blocks are non-rotatably connected to one another via their planar slide surfaces in parallel planes by means of dogging elements (7) which in turn are pivotally mounted on a central rotation shaft (8) arranged between the two part-cylindrical surfaces of the end portions.

4,194,407

VARIABLE SPEED TRANSMISSION

Laird B. Gogins, Salt Lake City, Utah, assignor to Power-Matic Corporation, Salt Lake City, Utah

Division of Ser. No. 751,952, Dec. 17, 1976, Pat. No. 4,116,083. This application Sep. 25, 1978, Ser. No. 945,123
Int. Cl.[2] F16H *29/04*
U.S. Cl. 74—117 **8 Claims**



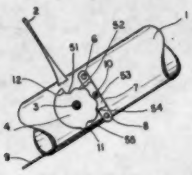
1. A variable throw crank assembly for use in oscillating a drive control element about a fixed point with a variable eccentricity comprising a first hollow shaft, a control shaft rotatably mounted in said hollow shaft, a first crank secured to the control shaft in eccentric parallel relation, a ring gear mounted on said hollow shaft surrounding said first crank; a pinion gear rotatably mounted on said first crank in meshing engagement with said ring gear; a second crank secured to said pinion gear in eccentric parallel relation to the first crank and defining a crank pin having at least one position aligned with the axis of the control shaft, and means for selectively rotating said control shaft within said hollow shaft whereby movement of said pinion with respect to the ring gear causes the pinion gear to rotate, thereby to vary the eccentricity of said crank pin with respect to the axis of said hollow shaft.

4,194,408

GEAR-SHIFT CONTROL FOR BICYCLE TRANSMISSION

Eberhard Hedrich, Osdorfer Landstr. 161, 2000 Hamburg 53, Fed. Rep. of Germany

Filed Oct. 31, 1977, Ser. No. 847,049
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650011
Int. Cl.[2] F16H 9/00
U.S. Cl. 74—217 B 5 Claims



1. A bicycle transmission adapted to establish a plurality of speed ratios between a pedal shaft and a traction-wheel shaft journaled in a frame, comprising:

at least one first sprocket on one of said shafts;

a plurality of second sprockets of progressively varying diameters on the other of said shafts;

an endless chain capable of connecting said first sprocket with any of said second sprockets;

gear-shifting means for relatively axially displacing said chain and said second sprockets to transfer the chain from one second sprocket to an adjoining one;

a control member on said frame within reach of a user;

a cam disk rotatable by said control member about an axis and provided with a plurality of substantially equispaced peripheral notches respectively assigned to said second sprockets and disposed at progressively varying distances from said axis; and

a rocker arm pivoted to said frame at one end and having another end linked with said gear-shifting means by a spring-loaded cable, said arm carrying between said ends a cam-follower element juxtaposed with said disk for entering any confronting notch thereof under stress from said cable, thereby indexing said control member in any selected working position while acting through said cable upon said gear-shifting means to maintain said chain in operative alignment with the corresponding second sprocket.

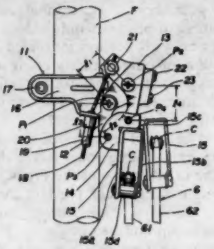
4,194,409

FRONT DERAILLEUR FOR A BICYCLE PROVIDED WITH A SWINGINGLY MOVABLE CHAIN GUIDE

Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 10, 1978, Ser. No. 923,355
Claims priority, application Japan, Jul. 12, 1977, 52-92844
Int. Cl.[2] F16H 9/00
U.S. Cl. 74—217 B 8 Claims

1. A front derailleur for a bicycle which is adapted to shift a chain between different diameter sprockets of a front sprocket assembly comprising: a base member secured to the frame of a bicycle, two linkage members each having a first end portion and a second end portion, and a movable member with a chain guide mounted thereon, said two linkage members having their first end portions pivotally connected with said base member, and said movable member being pivotally connected with the second end portion of each linkage member such that said base member, two linkage members and movable member are pivotably coupled to constitute a four-connected component linkage mechanism which swingingly moves said chain guide in a non-parallel relation with respect to said bicycle frame, the amount of movement of a chain guiding portion of said chain guide being larger than the amount of movement of said movable member with respect to the base member in the axial direction of the sprocket assembly.

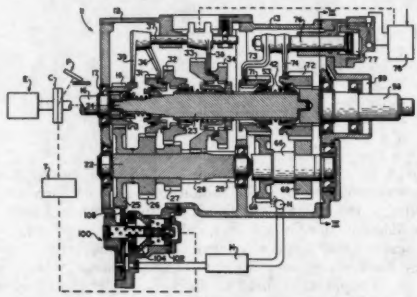


4,194,410

BLOCKED TRANSMISSION

Elmer A. Richards, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 5, 1977, Ser. No. 822,306
Int. Cl.[2] F16D 23/06, 67/04
U.S. Cl. 74—339 39 Claims



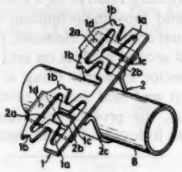
1. An improved, change gear, blocked transmission having an input shaft rotatably driven by a one-way prime mover through a normally engaged selectively disengaged friction master clutch, input gearing constantly meshingly engaged with the input shaft, axially engageable jaw clutches for rotationally fixing one of said input gears to a driven shaft, relatively nondeformable blockers for blocking engagement of said jaw clutches when the jaw clutch members thereof are at nonsynchronous rotation, said blockers rotationally carried by one of said jaw clutch members with a limited degree of relative rotational freedom, said blocker effective to block engagement of said jaw clutches when rotated relative to said one jaw clutch member, the improvement comprising:

means effective to decelerate and momentarily positively reverse rotate the input shaft of said transmission said means including a first gear meshingly engaged with said input gearing.

4,194,411
STEERING COLUMN SUPPORT ASSEMBLY

Shigeru Manabe, Kashihara, and Shuzo Hirakushi, Yao, both of Japan, assignors to Koyo Seiko Company Limited, Osaka, Japan

Filed Mar. 31, 1978, Ser. No. 893,323
Claims priority, application Japan, Apr. 6, 1977, 52-39716; Feb. 6, 1978, 53-13150
Int. Cl.[2] B62D *1/18*
U.S. Cl. 74—492 **14 Claims**

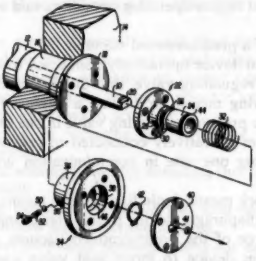


1. In a device for supporting on a vehicle body a steering column housing a steering shaft having a steering wheel at its upper end and connected to a steering gear at its lower end, a steering column support assembly having an energy absorbing function and comprising a support member secured to the steering column and having planar portions fastened to the vehicle body, and a frame-shaped energy absorbing member superposed on the planar portions of the support member and having at least one elongate deformation promoting aperture punched therein to form zigzag substantial portions in parallel to the axis of the column and subject to bending elastic deformation when absorbing energy, the absorbing member having one end secured to the planar portions of the support member and the other end having an inner edge positioned close to the steering wheel and defining the aperture and further including bolt means extending through the support member for fastening the support member to the vehicle body with said bolt means being positioned in contact with the inner edge.

4,194,412
HANDWHEEL DISENGAGE MECHANISM

Harold E. Boyer, Anna, Ohio, assignor to Graphics Equipment International Corp., Chicago, Ill.

Filed Oct. 20, 1976, Ser. No. 734,211
Int. Cl.[2] G05G *1/10*
U.S. Cl. 74—554 **8 Claims**



1. An automatic disengaging mechanism for automatically disengaging a first member from a shaft when the shaft rotates in a predetermined direction and for preventing engagement of the first member with the shaft when the shaft rotates above a predetermined speed in said predetermined direction, said disengaging mechanism comprising:

a stationary frame having said shaft rotatably mounted thereon, said stationary frame including a second member, said shaft passing through a shaft cavity in said second member;

said first member also being rotatably mounted on said second member adjacent said shaft and being axially movable relative to said stationary frame, said first member including an engaging and disengaging means for engaging said shaft when said first member is in an engaging axial position so that said shaft and first member rotate together and for disengaging said shaft when said first member is in a disengaging axial position so that said shaft and first member can rotate independently;

said first member defining a cylindrically-shaped cavity surface and said second member including a complementary cylindrically-shaped surface positioned in the cylindrically-shaped cavity;

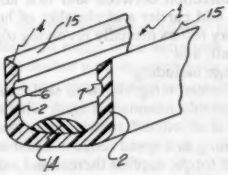
said complementary cylindrically-shaped surface including at least three grooves thereon, the first of the grooves encircling the shaft axis, the second of said grooves also encircling the shaft axis but being axially spaced from the first groove, and the third of said grooves spiraling about the shaft axis between the first and second grooves; and

said cylindrically-shaped cavity surface including a cam for riding in said grooves.

4,194,413
CHAIN GUARD AND METHODS OF MAKING AND USING THE SAME

Bernhard K. Hentze, 7852 Folk, Maplewood, Mo. 63143

Filed Sep. 16, 1977, Ser. No. 833,715
Int. Cl.[2] F16P *1/00*
U.S. Cl. 74—611 **3 Claims**



1. A chain guard for use with a chain drive provided with roller links secured together by pin links provided with pins comprising,

an elongated elastic and flexible tubular element with its ends secured together to form a loop, said element provided with a channel opening inwardly of said loop and communicating with the interior space of the tubular element, thereby providing a "U" shaped cross section to said elongated element, the inner surface of said element beveled and a pair of arcuate elongated channels provided on the interior walls of said element, said arcuate elongated channels having a width substantially less than the length of a leg of "U" shaped cross section, and disposed to accept said pins from said pin links.

4,194,414
PLANETARY SPEED REDUCER

Akira Satoh, Susono, and Teisuke Ishizaka, Toyama, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Fujikoshi, Toyama, both of, Japan

Filed Sep. 29, 1977, Ser. No. 837,885
Claims priority, application Japan, Oct. 8, 1976, 51-121055
Int. Cl.[2] F16H *37/06, 57/00*
U.S. Cl. 74—674 **12 Claims**

1. A speed changer for high speed rotation, comprising:

a casing;

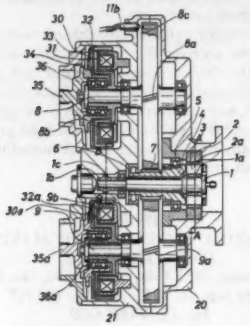
a first stage including

a first shaft having a first rolling track formed on the surface thereof,

a planetary roller friction reducer comprising a fixed outer ring contained within said casing and surrounding said first shaft adjacent one end of said shaft, said outer ring having a second rolling track formed on the inner surface thereof,

a planetary roller carrier having a plurality of cavities therein situated between said first and second rolling tracks, said carrier being rotatably supported by said casing and concentric with said first shaft, the other end of said first shaft projecting beyond said carrier, and

a plurality of hollow cylindrical planetary rollers positioned within respective cavities of said carrier and in



rolling contact with said first and second rolling tracks, and rollers being preloaded by an interference fit in the radial direction between said first and second rolling tracks, said carrier and plurality of hollow cylindrical planetary rollers orbitally revolving together about said first shaft; and

a second stage including

a pinion formed integrally with said carrier,

a gear rotatably mounted in mesh with said pinion, and

a second shaft affixed to said gear, said speed changer functioning as a speed reducer when said first shaft has an input torque applied thereto and said second shaft is connected to an output load, and as a speed increaser when an input torque is applied to said second shaft and an output load connected to said first shaft.

4,194,415

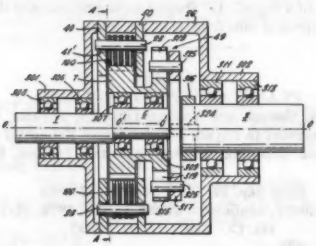
QUADRANT DRIVE

Frank W. Kennington, Les Ruisseaux House, St. Brelade, Jersey, Channel Islands, and Panayotis C. Dimitracopoulos, P.O. Box N. 7776, Nassau, The Bahamas

Filed May 8, 1978, Ser. No. 904,024

Int. Cl.[2] F16H *1/28*

U.S. Cl. 74—805 **23 Claims**



1. A motion transmitting device including eccentric means, wheel means having portions shaped to engage with linked but independently movable meshing elements, and movement-limiting means including a datum member, wherein said eccentric means is arranged to cause said meshing elements sequentially to enter into and subsequently to move out of engagement with said portions of said wheel means, said meshing elements being individually guided by said movement-limiting means within predetermined limits or orbital motion relative to said datum member such that a plurality of adjacent areas of said meshing elements are always simultaneously in engagement with, and stationary relative to, a corresponding number of said portions, said movement-limiting means including a plurality of individual connector elements, first profiles on said datum member and second profiles on said meshing elements, each of said connector elements being in engagement with respective said first and said second profiles to be held in captive dependency, the profiles constraining the engaging meshing elements to follow said orbital motion.

4,194,416

CONTROL SYSTEM FOR HYDRAULIC PRESSURE REGULATING VALVE IN AUTOMATIC TRANSMISSION CONNECTED TO MULTI-CYLINDER I.C. ENGINE WITH MEANS FOR OPERATING THE ENGINE ON SELECTED CYLINDERS OF ALL

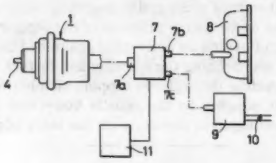
Fukashi Sugasawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 26, 1978, Ser. No. 945,876

Claims priority, application Japan, Oct. 12, 1977, 52-121414

Int. Cl.[2] B60K *41/18*

U.S. Cl. 74—859 **3 Claims**



1. A control system for a hydraulic pressure regulating valve in a hydraulic control circuit of an automatic transmission connected to a multi-cylinder internal combustion engine to be driven thereby, the engine having an intake manifold as a source of induction vacuum and being provided with means for operating the engine on selected cylinders of all under a predetermined engine operating condition, said control system comprising:

a source of a predetermined vacuum;

a diaphragm device operatively connected to said hydraulic pressure regulating valve, said diaphragm device including a spring means for biasing a valve member of said hydraulic pressure regulating valve in one direction, and a diaphragm operatively connected to said valve member and having one side in communication with the atmosphere;

fluid network means, including a valve means, for connecting said diaphragm device to said intake manifold and to said source of the predetermined vacuum to cause said diaphragm device to move said valve member, in the opposite direction against said spring means, in response to a pressure difference between the atmospheric pressure and the induction vacuum within said intake manifold; and

said valve means being operable in response to a signal representing that said engine runs on the selected cylinders of all for applying the predetermined vacuum to said diaphragm device on the opposite side of said diaphragm to help said diaphragm device in moving said valve member in the opposite direction.

4,194,417

APPARATUS FOR IMPROVING FUEL ECONOMY OF MULTI-CYLINDER I. C. ENGINE FOLLOWED BY AUTOMATIC TRANSMISSION VIA HYDROKINETIC UNIT

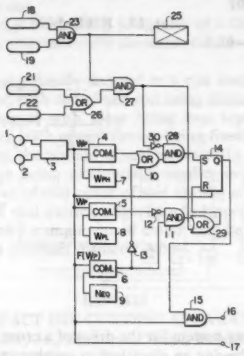
Fumiaki Kato, Yokohama; Haruhiko Itzuka, Yokosuka; Fukashi Sugasawa, Yokohama, and Junichiro Matsumoto, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 26, 1978, Ser. No. 945,877

Claims priority, application Japan, Oct. 12, 1977, 52-121416

Int. Cl.[2] B60K *41/04*

U.S. Cl. 74—866 2 Claims



1. In a vehicle comprising a multi-cylinder internal combustion engine which is provided with means for operating the engine on selected cylinders of all, and an automatic transmission connected to the engine via a hydrokinetic unit to be driven by the engine through the hydrokinetic unit, the automatic transmission including a hydraulic control circuit having a source of hydraulic pressure, a sump, a control unit, each for operating a friction element and a manually operable selector valve having an inlet port connected to the source of hydraulic pressure, a drain port connected to said sump and an outlet port connectable to said control unit the manually operable selector valve having a first position in which communication between the outlet port and the inlet port is cut off and communication between the outlet port and the drain port is established and having a second position in which the communication between the outlet port and the inlet port is established and the communication between the outlet port and the drain port is cut off:

switch valve means disposed in said fluid line means and having a drain port connected to said sump, said switch valve means being operative to permit communication between said manually operable selector valve and said drain port thereof when actuated;

solenoid means for actuating said switching valve means when energized;

vehicle speed sensing means for detecting that said vehicle is at a standstill;

load sensing means for detecting that load applied to said engine is below a predetermined level;

selector valve condition sensing means for detecting that said selector valve means is in the first position thereof;

switch valve condition sensing means for detecting that said switch valve means has been actuated;

means for producing a signal supplied to said solenoid means to energize the same when said vehicle speed sensing means detects that said vehicle is at a standstill and said load sensing means detects that load applied to said engine is below the predetermined level;

means for producing a second signal when said selector valve condition sensing means detects that said selector valve means is in the first position thereof or when said switch valve condition sensing means detects that said switch valve means has been actuated; and

means for causing said engine operating means to permit said engine to operate on the selected cylinders of all in response to said signals.

4,194,418

CIRCUIT ARRANGEMENT FOR THE REGULATION OF THE TRANSMISSION STAGES ON AN AUTOMATIC GEAR CHANGER

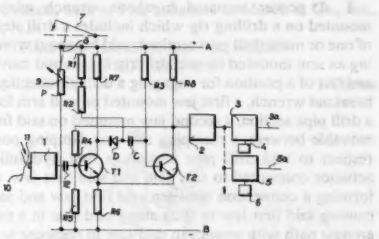
Ctirad Pechäček, and Richard Sehnal, both of Prague, Czechoslovakia, assignors to Ustav pro vyzkum motorovych vozidel, Prague, Czechoslovakia

Filed Aug. 21, 1978, Ser. No. 935,094

Claims priority, application Czechoslovakia, Aug. 19, 1977, 5459/77

Int. Cl.[2] B60K *41/18*

U.S. Cl. 74—866 8 Claims



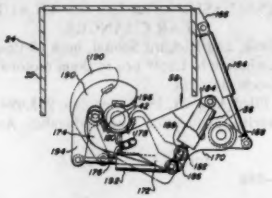
1. Arrangement for the regulation of the points of shift between the transmission stages of an automatic gear changer of a motor vehicle provided with an accelerator and said automatic gear changer, comprising a direct current voltage supply source, a pick-up device responsive to the speed of the vehicle, a monostable circuit comprising a first, input transistor and a second, upput transistor, means electrically connecting the output of the pick-up device to the base of the first transistor, circuit means comprising a condenser and a variable resistor for determining the time constant of the resistor for determining the time constant of the monostable circuit, the variable resistor being provided with a sliding contact mechanically connected to the accelerator of the vehicle, means electrically connecting the full resistance of the variable resistor across the opposite terminals of the voltage supply source, a filter having an input and an output, means electrically connecting the collector of the second transistor to the input of the filter and to the positive terminal of the voltage supply circuit, a logic circuit having two inputs and an output, a source of a reference voltage for the shifting of the gear changer from one stage to another connected to one of the inputs of the logic circuit, the other of the inputs of the logic circuit being connected to the output of the filter, the logic circuit being adapted to compare the output voltage of the filter with the reference voltage, the collector of the first transistor being connected by a circuit including a series connected diode and a condenser with the base of the second transistor, circuit means connecting the base of the second transistor with the positive terminal of the voltage supply source, the cathode of the diode being electrically connected to the collector of the first resistor, the junction point between the diode and the condenser being electrically connected to the positive terminal of the voltage supply source, and the sliding contact of the variable resistor being electrically connected to the positive terminal of the voltage supply source, and means for varying the speed at which the automatic gear changer changes from said one stage to said other stage thereof, said last-named means being electrically connected to and controlled by the output of the logic circuit.

4,194,419

DRILL PIPE HANDLING MECHANISM

Ray M. Mitchhart, and Hans Zingl, both of Dallas, Tex., assignors to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 815,347, Jul. 13, 1977, Pat. No. 4,128,135.
This application Aug. 14, 1978, Ser. No. 933,324
Int. Cl.[2] B25B *13/50*
U.S. Cl. 81—57.33 5 Claims



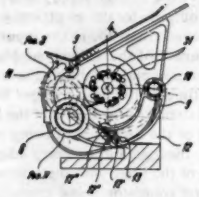
1. A power actuated breakout wrench adapted to be mounted on a drilling rig which includes a drill stem made up of one or more drill pipe sections, said breakout wrench including an arm mounted on said drill rig for pivotal movement into and out of a position for engaging a drill pipe section with said breakout wrench, a first jaw mounted on said arm for engaging a drill pipe section, a second jaw mounted on said first jaw and movable between a clamping and nonclamping position with respect to said drill pipe section, a first hydraulic cylinder actuator connected to said arm and said first jaw, and means forming a connection between said first jaw and said arm for causing said first jaw to slide along said arm in a substantially arcuate path with respect to said arm in response to the actuation of said first cylinder actuator for rotating, with respect to said arm, a drill pipe section clamped by said first jaw and said second jaw.

4,194,420

AUTOMATIC BAR-LOADING APPARATUS FOR A MULTI-SPINDLE AUTOMATIC LATHE

Hermann Flisch, Maienfeld, Switzerland, assignor to Eunipp AG, Zug, Switzerland

Filed Feb. 14, 1979, Ser. No. 12,229
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807771
Int. Cl.[2] B23B *15/00*
U.S. Cl. 82—2.7 2 Claims



1. Apparatus for automatically loading rods for feeding to a multi-spindle automatic lathe, the apparatus being of the type having a loading drum arranged coaxially with a spindle drum and angularly fixed therewith, the loading drum having a number of guide tubes, corresponding to the number of spindles and aligned with the spindles; a rod magazine; a rod separator apparatus; and, a feeding apparatus for the rod stock in the guide tubes and the spindles, which are provided with feeding jaws; the improvement therein comprising:

a traverse rod (10) fixed parallel to the guide tubes,

bails (11) and arms (9) pivotably supported by the traverse (10), the bails (11) and arms (9) carrying the rod magazine (4), the rod separator apparatus (5), and the rod feeding apparatus (6,7,8), and

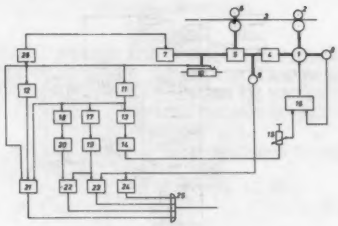
means for fixing the bails (11) and arms (9) in a chosen angular position.

4,194,421

SAFETY SYSTEM FOR THE DRIVE OF A SYNCHRONOUS CROSS CUTTER

Heiko Knoll, and Wilfried Kurth, both of Duesseldorf, Fed. Rep. of Germany, assignors to Jagenberg Werke Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,870
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739191
Int. Cl.[2] B26D *5/00*
U.S. Cl. 83—62.1 10 Claims



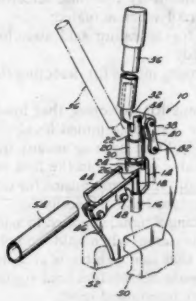
1. In a safety system for the drive of a cross cutter for a web of material, having an electrical or mechanical synchronizing system between the drives of the feed means and cutting means which is adjustable for the size of the piece to be cut and which consists of an adjustable asymmetrical mechanism and has speed control means associated with the drive of the feed means to limit the speed of the feed means on the basis of a signal corresponding to the setting of the asymmetrical mechanism, wherein the improvement comprises function generator means for generating a signal to be applied to the speed control means which is directly dependent thereon to define the speed value for the drive of the feed means and wherein the function generator means is responsive to the asymmetrical mechanism for size-related, maximum permissible web velocity.

4,194,422

TUBING NOTCHER

David A. Williams, 2484 Pinto Ln., Norco, Calif. 91760

Filed Oct. 2, 1978, Ser. No. 947,717
Int. Cl.[2] B26D *3/10, 3/14*
U.S. Cl. 83—581 3 Claims



1. A tubing notcher comprising:

a housing;

a cutter assembly movably mounted on said housing along a longitudinal axis, said cutter assembly including a cutter, said cutter having a cutting edge, said cutting edge being arcuate;

actuation means connected to said cutter, said actuation means for moving said cutter between a cutting position and a non-cutting position;

guide means mounted on said housing adjacent said cutter, said guide means having a longitudinal center axis, said longitudinal center axis being inclined in respect to said longitudinal axis with the inclination being slightly less than a right angle, whereby the tube is to be located upon said guide means with said cutter being positioned within the open end of said tube and upon said cutter being moved by said actuation means the open end of said tube is arcuately cut,

said cutting edge comprising a segment of a circle with the circle being concentrically disposed about said longitudinal axis,

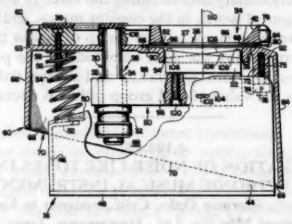
said cutter being fixedly secured to a rod intermediate the ends thereof, each end of said rod being slidingly mounted within a sleeve, with there being two separate spaced apart sleeves, each of said sleeves being fixedly secured to said housing, the portion of said rod directly adjacent said cutting edge being substantially smaller in cross-section than the area of said circle of said cutting edge to permit insertion of said cutting edge into said open end of said tube, whereby a single size of cutter may be employed to cut various different diameter tubes.

4,194,423

COMPACT DIE CUTTING APPARATUS

Norman W. Cutler, Jr., Braintree, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 5, 1978, Ser. No. 939,423
Int. Cl.[2] B26D *5/10*
U.S. Cl. 83—589 **13 Claims**



1. A die cutting apparatus for cutting selected sections out of a web of material, said die cutting apparatus comprising:

a base section for supporting said apparatus and mounting various apparatus components thereon, said base section including an upper portion and a lower portion;

actuating means for actuation operation of said apparatus, said actuating means being pivotally coupled to said upper portion of said base section for angular displacement toward and away from said lower portion of said base section;

a cutting die disposed on said actuating means for angular displacement therewith and including a die aperture bounded by a cutting edge portion of said cutting die;

a punch device including a punch cutting head having a cutting edge portion thereof, said punch being mounted on said lower portion of said base section for pivotal angular displacement and sliding motion relative thereto and said punch cutting head being configured to be operatively aligned with said die aperture for receiving said cutting edge portion of said die in response to said cutting die being advanced along a substantially perpendicular path of travel therebetween into operative relation with said punch cutting head when said actuator means is angularly displaced toward said lower portion of said base section and said punch device mounted thereon whereby said cutting edge portions of said cutting die and said punch cutting head cooperate to cut out a selected section of a portion of a web of material located between said cutting edge portions; and

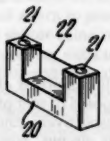
punch aligning means, responsive to angular displacement of said actuating means towards and away from said lower base section portion and said punch device thereon, for automatically angularly displacing and sliding said punch device relative to said lower base section to maintain said punch cutting head in operative alignment with said cutting die aperture such that relative movement between said cutting die and said punch cutting head is confined to said substantially perpendicular path of travel therebetween.

4,194,424

APPARATUS FOR LONGITUDINAL SLICING OF CYLINDRICAL BODY

Edward C. O'Rourke, West Point, and W. Wardle Fullerton, King of Prussia, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 13, 1978, Ser. No. 960,680
Int. Cl.[2] B26D *3/00*
U.S. Cl. 83—870 **2 Claims**



1. A device for slicing cylindrical columns of gels comprising a base and two transparent rectangular-shaped blocks and a U-shaped frame having a thin wire stretched across the terminal ends of the U-shaped frame; said blocks provided at one end with a hinge so that opposing faces of said blocks may be brought together; each of said blocks being provided with a depression in the face which matches the face in the other block, and when brought together, provides a cylindrical shaped recess adapted for firmly holding a cylindrical column of acrylamide gel; said blocks having said oppossing faces provided with recessed faces adjacent the cylindrical depression, whereby a thin wire may be passed longitudinally between said blocks to slice a gel column held therebetween.

4,194,425

KEY CODE GENERATOR

Hiroshi Kitagawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Mamamatsu, Japan

Filed Aug. 24, 1977, Ser. No. 827,214
Int. Cl.[2] G10H *1/00*; H04J *1/00*
U.S. Cl. 84—1.01 **1 Claim**

1. A Key code generator comprising:

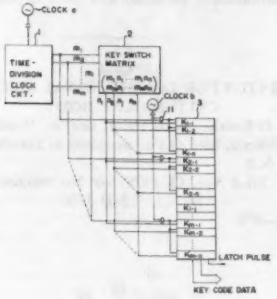
first and second clocks, each producing a respective predetermined clock output;

a plurality of key code generator circuits, each key code generator circuit respectively corresponding to one of a corresponding plurality of key switches, and each key code generator circuit comprised of a first memory circuit for storing therein the state of the corresponding key switch by means of said predetermined first clock, a second memory circuit for storing therein the output from said first memory circuit, a transition detector circuit for detecting the change of state of the key switch to its depressed and then released state from the output from said first and second memory circuits, means for generating a key code corresponding to the key switch from the

output from the transition detector circuit, and means for applying the first clock to the second memory circuit to complete the key code generation;

priority means for achieving the transition detecting operation in the key code generator circuit group in accordance with a predetermined priority to thereby generate the key codes from the key code generator circuits in decreasing order of priority while temporarily inhibiting the outputs from the transition detector circuits of lower priority to prevent the key code generation therefrom;

control means for inhibiting the key code generation based on the depression of a key in favor of the key code generation based on the release of a key; and



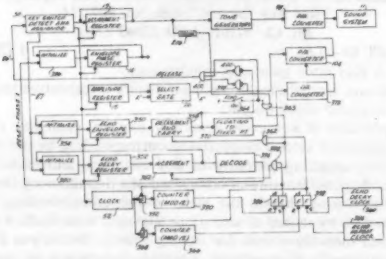
a time division circuit comprised of an (m×n) key switch matrix circuit composed of said plurality of key switches, each key switch respectively connected with one of the key code generator circuits, means for transferring key switch information from the key switch matrix circuit for each octave, the key switch information being time divided into m groups of switches with n switches in each group by said second clock which is of a lower speed than said first clock, and a control circuit for sequentially storing at said lower speed the key switch information into the key code generator circuits, and wherein said key code generator circuits are correspondingly divided into m blocks, each block composed of n key code generator circuits.

4,194,426

ECHO EFFECT CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Mar. 13, 1978, Ser. No. 885,552
Int. Cl.[2] G10H 1/02
U.S. Cl. 84—1.24 **7 Claims**



1. In a polyphonic tone synthesizer of a type having a keyboard in which one of a plurality of tone generators is assigned to a key when the key is depressed for generating a musical tone having a pitch determined by the particular key, apparatus for producing an echo effect comprising:

an echo envelope register storing a control word for each tone generator, an echo delay register for storing a control word for each tone generator, means for initializing to a predetermined value the control words in the echo envelope register and the echo delay register associated with a particular tone generator when the tone generator is assigned to a depressed key, means including an echo decay clock for periodically changing the value of each of the control words in the echo envelope register at a first predetermined rate, means including an echo repeat clock for periodically changing the value of each of the control words in the echo delay register at a second predetermined rate, means responsive to each control word in the echo delay register for activating the associated tone generator to generate a tone of predetermined duration each time the associated control word in the echo delay register is changed by the echo repeat clock, and means responsive to each control word in the echo envelope register for controlling the peak amplitude of the successive tones generated by the associated tone generator.

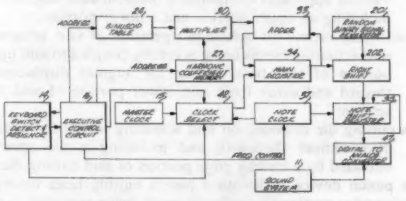
5. In a polyphonic digital tone synthesizer in which a plurality of different tones may be generated simultaneously using a plurality of digital tone generators in response to activating a corresponding number of keys on a keyboard, each key when depressed generating and storing a separate control word in the register means having bits identifying the particular key, each control word being assigned to a tone generator when the particular key is depressed for controlling the pitch of the tone generated by the tone generator in response to the bits identifying the key, apparatus comprising means including an echo repeat clock for pulsing the output of the tone generated by the tone generator in response to activation of a key at the repetition rate of the repeat clock, means responsive to actuation of a key for setting a group of bits in the control word associated with the particular key in the register means to an initial value, means for periodically decrementing the value of said group of bits in the control words in the register means, and amplitude control means responsive to said group of bits in the control words for controlling the peak amplitude of the pulsed tone generated by the tone generator, said means reducing the amplitude as the value of said group of bits is decremented.

4,194,427

GENERATION OF NOISE-LIKE TONES IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Mar. 27, 1978, Ser. No. 890,249
Int. Cl.[2] G10H 1/02
U.S. Cl. 84—1.24 **8 Claims**



1. An electronic tone synthesizer for generating an audio signal having a predetermined waveform in which noise is superimposed on the audio signal, comprising: a group of digital words representing the relative amplitudes of equally spaced points defining the waveform of an audio signal, a digital-to-analog converter, means transferring the digital words sequentially from the generating means and applying

the words in repetitive sequence to the converter, the transferring means including means for modifying the digital value of any selected word as it is being transferred, a random signal generator for generating an output signal at random time intervals, and means responsive to the random output signal for momentarily activating said means for modifying a word being transferred, whereby the digital words are modified at random during transfer.

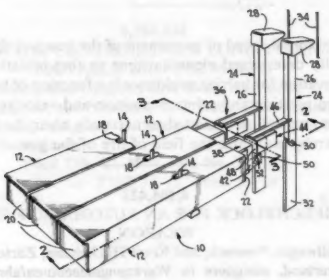
8. A tone synthesizer comprising source means providing a group of words representing respectively the amplitudes of equally spaced points defining the waveform of a musical tone, digital-to-analog converter, means transferring said group of words in timed sequence from the source means and applying the words to the converter, and a random signal generator for generating timing pulses at random time intervals, said transferring means including means responsive to the timing pulses from said random signal generator for modifying the values of those digital words transferred in time coincidence with the pulses from the random signal generator.

4,194,428

KEYBOARD MUSICAL INSTRUMENT

Bill E. McFarlin, Rte. 1, Box 5, Williston, N. Dak. 58801

Filed Dec. 7, 1978, Ser. No. 967,126
Int. Cl.[2] G10C *3/16*
U.S. Cl. 84—236 **7 Claims**



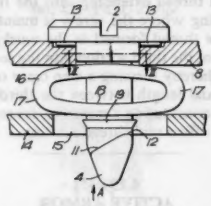
1. A keyboard musical instrument comprising
resonator means for producing an audible tone;
hammer means movable from a rest position in a generally horizontal direction to strike said resonator means;
pivotally mounted key means having a playing end and an actuating end for operating said hammer means, said key means being movable when said playing end is depressed to move said actuating end in a substantially vertical direction; and
magnetic action means for coupling said actuating end of said key means with said hammer means including
first magnet means mounted on said actuating end of said key means having a first pole of a first polarity and a second pole of a second polarity opposite said first polarity, said first and second poles being disposed one above the other, and
second magnet means mounted on said hammer means having a pole of said second polarity disposed in horizontal alignment with said first pole of said first magnet means when said hammer means is in said rest position such that said first magnet means attracts said second magnet means to hold said hammer means at said rest position and said first magnet means repels said second magnet means when said playing end of said key means is depressed to align said second pole of said first magnet means with said pole of said second magnet means whereby said hammer means is impelled to strike said resonator means when said playing end of said key means is moved.

4,194,429

QUICK RELEASE FASTENERS

Andrew C. W. Wright, Farnham, England, assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed May 8, 1978, Ser. No. 904,010
Int. Cl.[2] F16B *21/02*
U.S. Cl. 85—5 P **5 Claims**



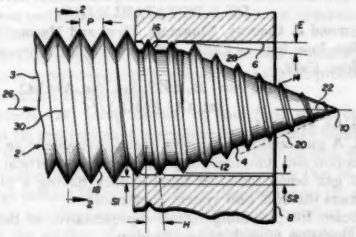
1. A quarter-turn fastener for fastening first and second members together comprising a plastics stud and a spacer, said stud having a head and a shank, said shank having at its end remote from said head a cross-head and at the end adjacent said head an abutment adapted to engage the side of an aperture through which said stud is mounted in use on rotation of said stud through a quarter of a turn to prevent further rotation in the same direction, said spacer being resilient and tubular and forming a first pair of opposing sides to engage with adjacent facing surfaces on the first and second members respectively and a second pair of opposing sides substantially perpendicular to the same adjacent facing surfaces, the second pair of opposing sides preventing contact between the two members and the first pair of opposing sides providing the required resilience for maintaining the cross-head of said stud in engagement with one of the two members to retain the two members in fastened interengagement, and said first pair of opposing sides defining apertures through which the shank of the stud passes.

4,194,430

THREAD-FORMING SCREW WITH STEP TAPER

Herman G. Muenchinger, South Dartmouth, Mass., assignor to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Filed May 5, 1978, Ser. No. 902,098
Int. Cl.[2] F16B *25/00*
U.S. Cl. 85—46 **10 Claims**



1. A thread-forming screw fastener comprising a shank that has a portion thereof constituting an entrance end at which the screw is inserted into a hole in a workpiece, said portion having a tip and helical thread, the crest of the thread tapering toward said tip, said thread having a contour defining means for swaging a thread in the workpiece hole, said thread taper having a first section with a first taper and a second section with a second taper, the first section being intermediate the tip and the second section, the taper on the second section being

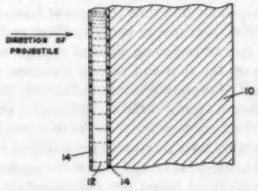
less than the taper on the first section, the second section being substantially where the thread-swaging action commences when said entrance end is inserted into the workpiece hole such that said first section serves to enter and locate initially the fastener in the workpiece hole but with said first taper thereof being of a magnitude that would result in excessive end pressure for thread starting if extended through said second section, the shank having a third section adjacent to the second section and said thread extending into the third section, said third section being where the screw is maintained in holding relation with the thread formed in the workpiece hole, there being a taper from the third section into the second section, the second section thereby forming a step taper of less than about three pitch in axial length between the third section and the first section and constituting a means to decrease the end pressure required to effect said thread starting.

4,194,431

ACTIVE ARMOR

Harold Markus, Philadelphia, and Joseph M. McCaughey, Ambler, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 5, 1966, Ser. No. 564,497
Int. Cl.² F41H *5/04, 5/12*
U.S. Cl. 89—36 A **4 Claims**



1. The combination with a metallic armor plate, of a protective layer of liquid reactant therefor comprising a small amount of water intimately commingled with an amalgam selected from the group consisting of sodium amalgam containing about 1 to 2 weight percent sodium, potassium amalgam containing about 0.75 to 1.5 weight percent potassium and lithium amalgam containing about 1 to 2 weight percent lithium, and means providing a relatively-thin inert barrier between the material of said plate and the protective layer.

4,194,432

APPARATUS FOR MAXIMIZING THE FIRING FIELD OF A ROTATABLE GUN

Raymond J. Conway, Mountain View, and Hasmukh T. Shah, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Nov. 25, 1977, Ser. No. 854,942
Int. Cl.² F41G *5/14*
U.S. Cl. 89—41 C **26 Claims**

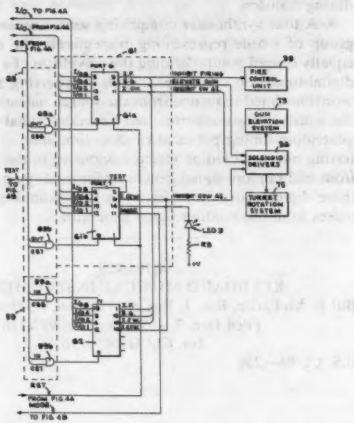
1. A gun control system for a gun rotatable in an azimuthal direction and simultaneously elevatable in a vertical direction, said gun being mounted upon a deck having a plurality of barriers thereon, said system comprising:

means for providing signals representative of the size and location of each of said barriers;

means for sensing the horizontal and the vertical angular positions of said gun and for providing signals representative of said positions;

means for periodically comparing successive signals indicative of the horizontal angular positions of said gun and for periodically calculating the horizontal speed of movement of said gun from said periodic comparison;

means for periodically comparing the current vertical angular position of the gun with the size of a barrier being approached and determining an elevation time required to elevate the gun at a fixed elevation speed to clear the barrier, means for providing a signal at a time sufficiently in advance to elevate the gun at said fixed speed to clear the barrier when the gun is moving toward the barrier at an elevation lower than the height of the barrier, said last named means utilizing both the periodically calculated



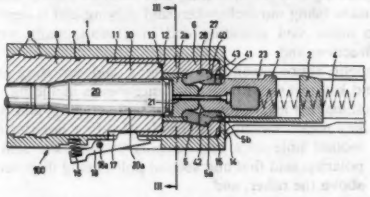
horizontal speed of movement of the gun and the periodically determined elevation time so that initiation of gun elevation for barrier avoidance is a function of both elevation position and azimuth position and velocity whereby the gun will be elevated to narrowly clear the barrier to thereby maximize the field of fire of the gun.

4,194,433

BREECHBLOCK FOR AN AUTOMATIC FIRING WEAPON

Jürg Zellweger, Neerach, and Ernst Hürlemann, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Mar. 21, 1978, Ser. No. 888,669
Claims priority, application Switzerland, Mar. 31, 1977, 4018/77
Int. Cl.² F41D *3/00*
U.S. Cl. 89—190 **5 Claims**



1. A breechblock for an automatic firing weapon comprising:

a breechblock housing having a bore;

a weapon barrel rigidly secured in said bore;

securing means for securing said weapon barrel in said bore;

a breechblock body displaceably arranged in said breechblock housing;

two blocking bodies pivotably mounted on said breechblock body for locking the breechblock body with said breechblock housing;

a locking body possessing a substantially sleeve-shaped

configuration and arranged substantially coaxially with respect to the weapon barrel in said bore of the breechblock housing;

said locking body having two arresting surfaces at each of which bears one of said blocking bodies;

said locking body having a rear end face and a further face spaced from said rear end face;

said breechblock housing having shoulder means;

said weapon barrel having a rear end surface;

said locking body being held by means of its rear end face in abutting relation with said shoulder means of said breechblock housing and by means of its further face in abutting relation with said rear end surface of the weapon barrel;

said rear end face of the locking body being provided with a cut-out extending substantially transversely with respect to the lengthwise axis of the weapon; and

said cut-out having two opposed side walls, each side wall forming one of said arresting surfaces.

4,194,434

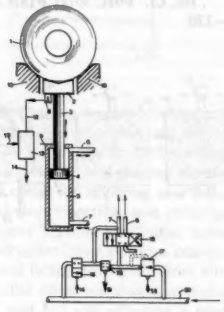
DEVICE FOR CONTROLLING A LONGITUDINALLY MOVABLE DRIVING MEANS

Albertus Italiaander, Uitgeest; Arie Kruk, Akersloot; Willem G. Nat, Ijmuiden, and Nicolaas M. J. Rees, Bloemendaal, all of Netherlands, assignors to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Feb. 17, 1977, Ser. No. 765,240

Int. Cl.[2] F15B *13/16*; F01B *25/04*

U.S. Cl. 91—20 **6 Claims**



1. A device for controlling both the displacement of, and the transmittal of force by, a longitudinally movable driving means, comprising a piston rod which is hydraulically movable inside a cylinder, means for emitting and receiving ultrasonic waves, which are transmitted between a movable and a fixed part of the driving means, a logic circuit and a controllable source of force, said means for receiving being electronically connected to said controllable source of force via said logic circuit, said logic circuit allowing movement of the driving means with a small force into a position in which a counteracting force exceeds the driving force, whereupon the driving force is increased and stabilised at a value at which the counteracting force is compensated and the driving means is additionally moved over an adjustable length of path.

4,194,435

PERCUSSION MECHANISM

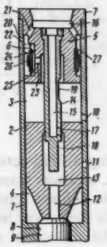
Viktor A. Gaun; Anatoly V. Belousov; Vadim D. Petukhov; Gennady I. Suxov; Nikolai A. Belyaev; Vitaly K. Alyabiev, and Klimenty E. Rassomakhin, all of Novosibirsk, U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR, Novosibirsk, U.S.S.R.

Filed Jun. 30, 1977, Ser. No. 811,836

Claims priority, application U.S.S.R., Jul. 7, 1976, 2391708

Int. Cl.[2] F01L *21/02*

U.S. Cl. 91—234 **11 Claims**



1. A percussion mechanism actuated by a pressurized fluid supplied from a source of pressurized fluid, comprising a housing (1) with an internal cylindrical space and exhaust ports (10, 11);

a fluid actuated piston (2) positioned for axial reciprocation in said space of said housing and dividing said space into a working stroke chamber (3) of a variation volume and an idle stroke chamber (4) of a variable volume, and each of said chambers communicating with one of said exhaust ports;

fluid distributing means (5) including pressure responsive surfaces (24) adapted to create passages (25, 23) for distributing the fluid into said working stroke chamber (3) of the mechanism;

a distribution unit (14), having inlet means (15) for distributing the fluid into at least one of said chambers (3, 4), accommodated in said housing (1) adjacent to said working stroke chamber (3) and being in mutual cooperative association with said fluid distributing means (5) and said piston for establishing means of communication (17, 19) between said chambers (3, 4) and the source of pressurized fluid;

a work-performing member (9) accommodated in said housing (1) to receive impacts from said piston (2) reciprocated by the action of the fluid;

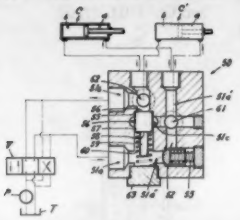
said surfaces (24) being carried by said fluid distribution means (5) and including a resilient annular valve element (24); valve seats (6) provided in a surface of said fluid distribution means (5), their number equalling that of the passage means (23) of said fluid distribution means (5), said resilient annular valve element (24) being stretched tight about the surface of said fluid distribution means (5) in opposition to said passage means (23) and encircling said fluid distribution means (5) about its periphery, an internal surface of said resilient annular valve element (24) with said valve seat (6) defining at least inlet one passage (25) for controlling fluid flow about said fluid distributing means (5), whereby said portion is repeatedly driven up and down in said housing by the action of said fluid flowing into and out of said chambers and said exhaust ports via said inlet means and said passage means.

4,194,436

SPEEDUP DEVICE FOR RECIPROCATING CYLINDERS

Yusuke Imada, Itami, Japan, assignor to Sanyo Kiki Kabushiki Kaisha, Kyogo, Japan

Filed Jun. 8, 1977, Ser. No. 804,846
Claims priority, application Japan, Jun. 10, 1976, 51-75993
Int. Cl.[2] F15B *13/042*
U.S. Cl. 91—420 **1 Claim**



1. In a machine utilizing a fluid actuated reciprocating piston/cylinder mechanism, a power transmitting rod connected to one side of the piston to define a retraction chamber and the side of the piston opposite the power transmitting rod defining an extension chamber, the volume of the retraction chamber being less than the volume of the extension chamber; a directional control valve for alternately fluidly connecting a source of pressurized fluid and a reservoir with a pair of control valve outlets adapted for controlling alternate extension and retraction of the power transmitting rod; wherein the improvement comprises a two valve speed-up valve unit comprising:

a speed-up valve housing;

an extension chamber valve inlet in fluid communication with one of said control valve outlets;

a retraction chamber valve inlet in fluid communication with the other of said control valve outlets;

an extension chamber valve outlet in fluid communication with the piston/cylinder extension chamber;

a retraction chamber valve outlet in fluid communication with the piston/cylinder retraction chamber;

a first fluid passage interconnecting said retraction chamber valve inlet and said retraction chamber valve outlet;

a check valve interposed in said first fluid passage and having a first position wherein fluid flow through said first fluid passage is completely blocked and a second position wherein fluid flow is permitted, said check valve being actuated by fluid pressure in said first fluid passage;

check valve biasing means for normally biasing said check valve to said first fluid blocking position;

a second fluid passage interconnecting said extension chamber valve inlet and said extension chamber valve outlet;

a circulation valve means comprising a single unitary piston element, said piston element comprising a solid cylindrical plug having opposed faces with a centrally located valve stem extending from one of said faces for engaging said housing when said circulation valve means is open, said plug being slidable in a bore opening directly into said first passage upstream of said check valve, said circulation valve means being positioned in a third fluid passage comprising a first portion extending between said piston element and said retraction chamber valve outlet and a second portion element extending between said piston element and said extension chamber valve outlet, said first portion joining with said piston element along a longitudinal side of said piston element, and said second portion joining with said piston element along the other face of said piston element, whereby only fluid pressure in said second portion of said third passage can actuate said circulation valve to an open position wherein said first and second portions of said third passage are joined, said circulation valve being normally biased to a closed position by a single circulation valve biasing means interposed between said housing and said one face and surrounding said valve stem wherein fluid flow in said third fluid passage between said first and second portions is blocked;

wherein when said power transmitting rod is retracted, said control valve is actuated to fluidly connect said pump with said first fluid passage and to connect said reservoir with said second fluid passage, said pressurized fluid in said first fluid passage acting on said check valve to cause said check valve to assume said second position, whereby fluid flows to said piston/cylinder retraction chamber and, as said power transmitting rod retracts, fluid flows from said extension chamber through said second passage and control valve to said reservoir, said circulation valve assuming said closed fluid blocking position under the force of said circulation valve biasing means and fluid acting on said one face; and

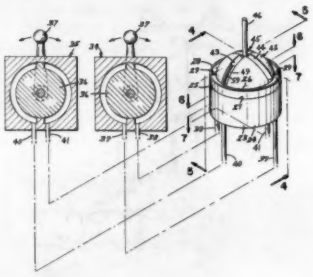
wherein when said power transmitting rod is extended, said control valve is actuated to fluidly connect said pump with said second fluid passage, said pressurized fluid in said second fluid passage acting on said circulation valve means to cause said circulation valve means to assume said open position whereby fluid flow in said third fluid passage between said retraction chamber valve outlet and said extension chamber valve outlet is permitted, said check valve assuming said first position under the force of said check valve biasing means, whereby fluid flows from said pump to said piston/cylinder extension chamber and, as said power transmitting rod extends, fluid flows from said retraction chamber through said third fluid passage to said piston/cylinder extension chamber, whereby an increased volume flow rate of fluid flows to said extension chamber during power rod extension to compensate for the increased volume of said extension chamber.

4,194,437

HYDRAULIC SERVO MECHANISM

Mark E. Rosheim, 1851 Chester, Apt. No. 4, Royal Oak, Mich. 48072

Filed Mar. 9, 1978, Ser. No. 884,903
Int. Cl.[2] F01C *9/00*; F15B *7/00*
U.S. Cl. 92—120 **13 Claims**



1. A fluid-servo mechanism comprising:

(a) a base structure defining a generally hemispherical seat and a pair of opposed radially inwardly opening circumferentially extending guide channels disposed in a plane passing through the radial center of said seat;

(b) a generally spherical body rotatably mounted in seating engagement with said seat and having a pair of intersecting, radially outwardly opening channels extending circumferentially of said body and disposed in planes extending through the center of said body and normal to each other;

(c) a pair of trunnion elements mounted in said structure in said first mentioned plane and having portions thereof

disposed in diametrically opposite portions of one of said radially outwardly opening channels;

(d) and a second pair of trunnion elements having portions disposed in said radially inwardly opening guide channels and other portions disposed in diametrically opposite portions of the other one of said radially outwardly opening channels;

(e) said base structure having fluid ports for connection to a source of fluid under pressure, and fluid passageways communicating with different ones of said ports and respective portions of said radially outwardly opening channels.

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FLEXIBLE TUBE BAGGING MACHINE

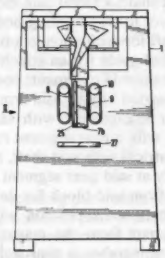
Florian Schmachtel, Grossen-Linden, Fed. Rep. of Germany, assignor to ROVEMA Verpackungsmaschinen GmbH & Co. KG., Giessen, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 861,975

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657790

Int. Cl.[2] B31B *1/38*

U.S. Cl. 93—20 **1 Claim**



1. In a flexible tube bagging machine having a feed device for a foil, a shaping member over which said foil is drawn and formed into a tube and a foil transfer device arranged downstream of said shaping member, said shaping member having a sleeve portion and a collar for engaging said foil, said collar being secured to said sleeve portion, said collar guiding said foil inside of said sleeve portion, said collar having a collar neck portion and two collar chest portions connected to said collar neck portion and facing outwardly from a front side of said machine, said collar chest portions converging in a conveying direction of said foil and effecting a guiding of the lateral edges of said foil toward one another, the improvement comprising wherein said sleeve portion has a rectangular cross section, the long sides of which extend parallel to said front side of said machine, wherein said sleeve portion has a cutout portion on said outwardly facing long side thereof, wherein said collar chest portions extend along the opposed edges of said cutout, wherein said collar chest portions are of different length, wherein the longer collar chest portion extends through a central plane extending through a central longitudinal axis of said sleeve portion to a position adjacent an opposed edge of said cutout and being perpendicular to said front side of said machine and wherein said collar neck portion is asymmetrical with respect to said central plane and the part which lies on the side of said longer collar chest portion is wider than the other part thereof.

4,194,439

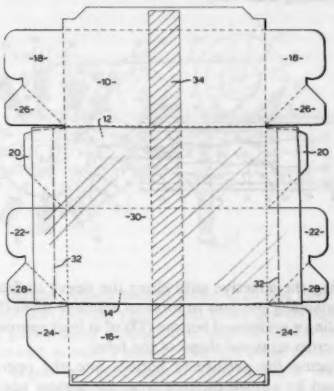
METHOD OF MAKING COLLAPSIBLE PAPERBOARD CUP

John Zimmermann, Willowdale, Canada, assignor to Somerville Belkin Industries Limited, London, Canada

Filed Jan. 3, 1978, Ser. No. 866,561

Int. Cl.[2] B31B *7/00*

U.S. Cl. 93—36.05 **3 Claims**



1. A method of making a folded cup assembly comprising the steps of:

taking a flat blank for a tubular assembly that has side panels and bottom flaps for a lock bottom at each end;

taking a length of plastics sheet material in lay flat tubular form with a transversely extending seal line adjacent each of its ends;

said length of plastics material having a lay flat width equal to one-half the combined width of said panels of said blank;

applying adhesive to the blank including a band of adhesive transversely across all of the side panels of said blank intermediate the ends of the side panels;

laying said length of plastics sheet material on said blank with its width extending across adjacent side panels; and

folding the side panels and bottom flaps of said flat blank to make a tubular folded cup assembly with said liner adhered to the inside of the side panels thereof over said band of adhesive that extends across said side panels, said folded cup assembly being separable to form two individual cups by cutting said folded blank transversely of said side panels between the edges of said band of adhesive that extends transversely of said side panels.

4,194,440

METHOD AND APPARATUS FOR MAKING DRUM-SHAPED CARDBOARD CONTAINERS

Rudolf Görig, Kanalstrasse 12, D-7064 Remshalden 1, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,683

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 2705596

Int. Cl.[2] B31B *17/26*

U.S. Cl. 93—39 C **21 Claims**

1. Method of making a cardboard container of circular or polygonal, generally cylindrical form, open at one end,

comprising, in accordance with the invention, the steps of

providing a flat, essentially rectangular blank (6) having one dimension of approximately the height of the container and another dimension slightly longer than the developed circumference of the container;

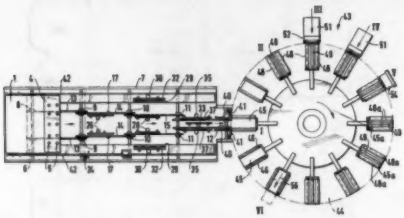
applying a strip of adhesive along a longitudinal edge of the

blank parallel to the axis of the cylinder when the container is formed;

preforming the blank to have generally U-shaped cross section in advance of the step of wrapping the blank around a mandrel (45, 45*a*);

wrapping the blank around the mandrel (45, 45*a*) of the general shape of the container to form an open sleeve;

overlapping edge portions of the blank to form an axially extending seam line;



adhering the adhesive strip along the sleeve surface at the overlapping portions to form an adhesive seam (50);

providing a preformed bottom (53) of at least approximately the cross-sectional shape of the tube;

introducing the preformed bottom into the open sleeve spaced by a small distance from the bottom edge of the sleeve;

and securing the preformed bottom in the sleeve.

4,194,441

METHOD AND APPARATUS FOR FORMING PAPER BOXES AND THE LIKE

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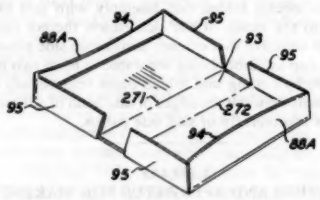
Filed Apr. 12, 1977, Ser. No. 786,955
Int. Cl.² B31B *1/46*
U.S. Cl. 93—51 HW **14 Claims**



1. Apparatus for forming from pre-cut blanks a box having a bottom, side flaps, and end flaps with inner and outer portions, and comprising a movable forming head, means for inserting a box blank in the path of the forming head, a former matrix, means for impelling the forming head and the blank to traverse the former matrix, means for bending the side flaps and end flaps with respect to the box bottom into a tray configuration in the former matrix, means for securing the side flaps to the end flaps at the junctures thereof, means for doubling the end flaps to overlap the inner and outer portions of each end flap, means for distorting the overlapped end flaps into a concave configuration with respect to the tray, and means for permanently fixing the portions of each of the distorted flaps together while distorted.

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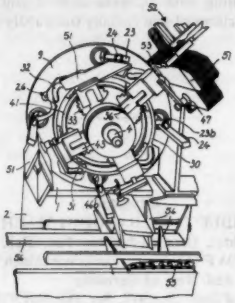
DEVICE FOR PICKING UP SEMI-RIGID SHEET-LIKE ELEMENTS FROM A MAGAZINE AND TRANSFERRING THEM ONTO A CONVEYOR

Guglielmo Martelli, Via Gaibola, 13/3, Bologna, Italy

Filed Mar. 16, 1978, Ser. No. 888,044
Claims priority, application Italy, Mar. 18, 1977, 3374 A/77
Int. Cl.² B65G *59/06*
U.S. Cl. 93—53 SD **2 Claims**



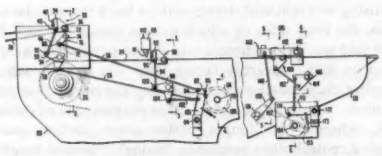
1. A device for picking up semirigid sheet-like elements from a magazine, characterized in that it comprises a rotating body driven of continuous motion and supported by a normally horizontal and fixed shaft, a radial cam mounted on said shaft and fixed with respect to said rotating body, at least one arm mounted on said shaft for oscillation in a plane normal thereto and serving as a radial guide for an attaching block of a gripping member for the sheet-like elements contained in the magazine, a planet gear carried idly by said arm and provided with an eccentric pin for engagement with said radial cam, said planet gear meshing with a gear segment rigid with said rotating body and concentrical with said shaft, and a cam provided on said rotating body at said gear segment and being engaged by a pin projecting from said block for defining the displacement of the block between a position wherein the gripping member is spaced apart from the magazine and a position wherein said gripping member is approached thereto to pick up said sheet-like elements, said radial cam being contoured such as to cause an advanced oscillatory movement of said arm prior to the latter reaching the magazine and the stopping of said arm with respect to the magazine when the gripping member is in its position of sheet-like element picking up.

4,194,443

COOKIE CAPPER APPARATUS

Herman D. Mims, P.O. Box 26794, Charlotte, N.C. 28213

Filed Aug. 8, 1975, Ser. No. 603,051
Int. Cl.² A23P *1/00*; A21C *9/04*
U.S. Cl. 99—450.4 **7 Claims**



1. A cookie capper apparatus comprising first conveyor means for supporting and conveying a plurality of rows of baked cookie halves, second conveyor means having one end thereof disposed beneath said first conveyor means in alignment therewith, said conveyor means being vertically spaced

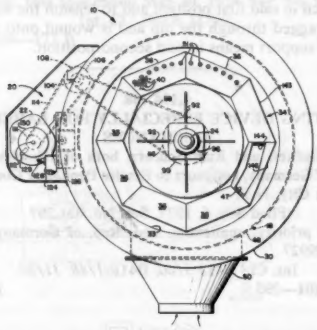
apart a sufficient distance so that during free-fall of the cookie halves from said first conveyor means to said second conveyor means the cookie halves will flip 180°, means selectively movable into position for engaging alternate rows of cookie halves to prevent said alternate rows of cookie halves from flipping 180° as they fall from said first conveyor means to said second conveyor means, filling means for automatically depositing a predetermined amount of filling on those cookie halves which have flipped 180° as they travel along said second conveyor means, vacuum transfer means for sequentially picking up each row of cookie halves which do not have filling thereon and depositing the unfilled cookie halves on the filled cookie halves to cap the same to provide a filled cookie.

4,194,444

PARTICULATE SOLIDS

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

Filed Nov. 5, 1975, Ser. No. 628,907
Int. Cl.² F25D *17/02*; F26F *17/12*
U.S. Cl. 99—479 **8 Claims**



1. Apparatus for processing particulate solids which includes a reactor comprising: a shell; means in said shell for supporting a bed of solids to be processed; means for so directing a flow of fluid upwardly though said reactor as to cause the solids to circulate in a vertical pattern therein; and means for introducing a liquid separately from said fluid and in finely divided form into the reactor at a level generally coincident with that of the flow directing means and into contact with the solids circulating in said reactor, the means for effecting a flow of process fluid upwardly through the reactor comprising a horizontally oriented means having fluid passages therethrough in the lower reaches of the reactor and the means for contacting the solids with a finely divided liquid comprising nozzles for spraying the liquid into the reactor adjacent said passages so that the particles of the liquid will be entrained in the process fluid and thereby brought into intimate contact with the particulate solids.

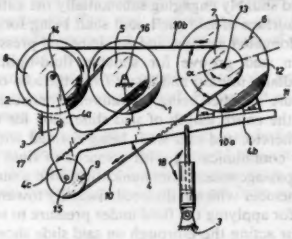
4,194,445

SELF-ADJUSTING HUSKER

Helmut Gemsjäger, Brunswick, Fed. Rep. of Germany, assignor to Buhler-Miag GmbH, Brunswick, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 874,873
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705334
Int. Cl.² B02B *3/04*
U.S. Cl. 99—618 **24 Claims**

1. A decorticating device, particularly a grain husker, comprising a support; a pair of cooperating decorticating rollers one of which is mounted on said support for rotation about a stationary axis; a carrier; means for rotatably mounting the decorticating roller on said carrier; means for displaceably mounting said carrier on said support for movement of said other decorticating roller closer to and farther away from said stationary axis; and means for rotating said decorticating rollers, including two driven pulleys one of which is connected to said one and the other to said other decorticating roller for joint rotation therewith, at least one idler pulley, a driving pulley, means for setting said driving pulley in rotation including a motor, and means for transmitting the rotation of the driving pulley to said driven and idler pulleys, including at



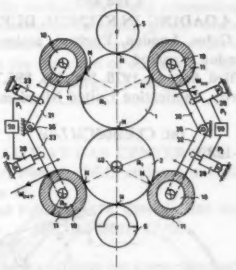
least one endless element trained about all of said pulleys, said motor with said driving pulley, said other driven pulley and said idler pulley being supported on said carrier for displacement therewith in such a manner that said other decorticating roller is urged by gravitational force toward the roller mounted for rotation about said stationary axis to automatically compensate for any wear of the peripheral roller surfaces, without changing the tension in said endless element.

4,194,446

ROLLS, SUCH AS FILLED CALENDER ROLLS, HAVING DEFLECTION COMPENSATION

Jaakko Palovaara, Jyväskylä, Finland, assignor to Valmet Oy Finland

Continuation of Ser. No. 826,169, Aug. 19, 1977, abandoned.
This application Sep. 27, 1978, Ser. No. 946,157
Claims priority, application Finland, Aug. 20, 1976, 762392
Int. Cl.² B30B *3/04*
U.S. Cl. 100—162 B **3 Claims**



1. Calender apparatus comprising a plurality of hard rolls including at least two parallely extending hard surfaced rolls substantially vertically disposed one above the other, the surfaces of which are in line contact with each other defining a first nip; at least one filled roll extending parallel to said hard rolls, said filled roll comprising an inner shaft, an outer shell coaxially surrounding said shaft, the inner surface of said shell being spaced from said shaft to define an annular gap therewith, and means for supporting said shell for rotary movement with respect to said shaft around the common axis of said shaft and shell, the outer surface of said outer shell of said filled roll being in line contact with the surface of one of said hard rolls defining a second nip, the angle defined by the lines extending

between said first nip, the axis of rotation of said hard roll in contact with said filled roll and said second nip being between 90° and 180°; means for selectively adjusting the pressure exerted by said at least one filled roll on said hard roll at said second nip; first deflection-compensating means operatively associated with said filled roll inner shaft for applying on the interior of said shell a first vertically upwardly directed force to compensate for the weight of said filled roll, said first deflection-compensating means including a slide shoe situated against and slidably engaging substantially the entire length of the inner surface of said shell, said shaft being formed with an exterior elongated groove, and an elongated pressure member situated in said groove for slidable fluid-tight movement therein radially toward and away from the axis of said shaft, said pressure member being operatively connected with substantially the entire length of said slide shoe for transmitting pressure thereto, and said shaft being formed with a passage means for communicating with a source of fluid under pressure, said passage means communicating with a surface of said pressure member which is directed inwardly toward the axis of said shaft for applying the fluid under pressure to said pressure member for acting therethrough on said slide shoe to provide for deflection-compensation and second independently controllable deflection-compensating means for applying on the interior of said shell a second force directed substantially outwardly in the direction defined between the axis of rotation of said filled roll and said second nip to compensate for the tendency of said filled roll to be deflected as a result of pressure at said second nip, said second deflection-compensating means including a pair of elongated sealing means extending across said gap between said shaft and inner surface of said shell for fluid-tightly sealing an angular portion of said gap which extends about said axis between said pair of sealing means, said shaft being formed with a passage means for providing communication between said angular portion of said gap and a source of fluid under pressure, whereby through said fluid under pressure it is possible to provide at said angular portion of said gap a pressure acting on said shell to achieve a desired deflection-compensation, the magnitude of said second force being independently adjustable relative to the magnitude of the pressure exerted by said filled roll on said hard roll at said second nip as determined by said selective pressure adjusting means.

4,194,447

STENCIL LOADING IN STENCIL DUPLICATORS

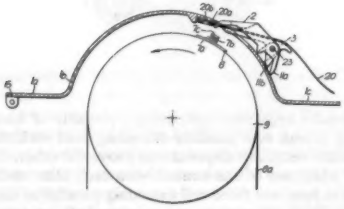
Albert G. R. Gates, London, England, assignor to Gestetner Limited, London, England

Filed Apr. 12, 1978, Ser. No. 895,753

Claims priority, application United Kingdom, Apr. 29, 1977, 18132/77

Int. Cl.[2] **B05C** *17/08*

U.S. Cl. 101—128.1 **12 Claims**



1. A stencil duplicator having rotatable support means rotatable about an axis and having a surface for carrying a stencil having a relatively stiff heading strip with holes therein, a plurality of pins carried by said rotatable support means to engage said heading strip of the stencil to hold the stencil on the rotatable support means during printing, and means for loading said stencil onto said rotatable support means, the loading means comprising:

(a) a pair of guide members;

(b) means mounting said guide members for pivotal movement between a first position in which said heading strip of the stencil can be registered in a predetermined position spaced from said surface of the rotatable support means, and a second position in which the guide members will hold the heading strip of the stencil in a location through which location said pins travel during rotation of the rotatable support means, whereby when the stencil is in said location said pins carried by the rotatable support can sweep past said guide members and enter said holes in the heading strip of the stencil thereby entraining the stencil to be wound onto said surface of the rotatable support;

(c) edge means on both said guide members defining a nip through which said heading strip of the stencil may be inserted for loading; and

(d) stop means on said guide members positioned to hold said guide members with said nip having a width which is greater in the first position of said guide members than in said second position thereof to facilitate insertion of a stencil in said first position and to tension the stencil as it is dragged through the nip and is wound onto the rotatable support means in said second position.

4,194,448

PRINTING DEVICE ESPECIALLY FOR LABELLING APPLIANCES

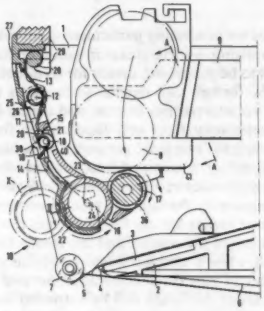
Werner Becker, and Kurt Schrotz, both of Hirschhorn, Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Sep. 6, 1977, Ser. No. 831,287

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639927

Int. Cl.[2] **B41J** *3/60;* **B41F** *1/48, 31/30*

U.S. Cl. 101—295 **10 Claims**



1. In a printing device such as labelling appliance having a printing table, a printer movably mounted with respect to the table, an ink carrier which inks printing types carried by said printer, an inking pivot member which holds said ink carrier at the free end thereof and which is pivotable against the force of a return spring, said pivot member being adapted to be pivoted out of the path of movement of the printer when the printer moves toward the printing table, the improvement comprising

said ink carrier being a resilient transfer roller which is freely rotatably mounted with respect to said inking pivot member and including a dense, readily wettable surface;

an inking roller that stores ink, said inking roller being made of a finely porous material;

an inking roller support having side walls where each wall has an open-ended bearing recess which opens toward said transfer roller for freely rotatably supporting said inking roller about an axis parallel to the axis of rotation of

said transfer roller, said inking roller support being pivotably supported by the inking pivot member about an axis which is parallel to and spaced between the pivot axes of the inking pivot member and the transfer roller; and

a pressure spring for biasing the inking roller support so that said inking roller normally engages said transfer roller to ink the transfer roller upon relative rotation of the inking and transfer rollers where said relative rotation is due to frictional contact between the inking and transfer rollers, said inking roller being exchangeable by pivoting said inking roller support away from inking pivot member to thereby remove the inking roller out of contact with the transfer roller and thus permit the removal of the inking roller from the open-ended bearing recesses of the side walls of the inking roller support and the replacement thereof.

4,194,449

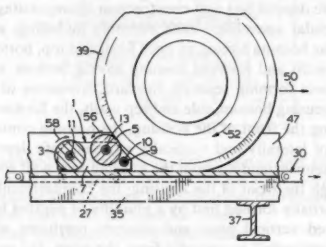
DOUBLE DOLLY

Arisma J. Breau, 131 North Bonnington Avenue, Scarboro, Ontario, Canada

Continuation-in-part of Ser. No. 756,125, Jan. 3, 1977, abandoned. This application May 30, 1978, Ser. No. 910,606

Int. Cl.[2] B61B *13/00*

U.S. Cl. 104—172 B **3 Claims**



1. A double dolly for use on a conveyor in moving an object over a supporting surface; said dolly consisting of a first roller which rotates about a first axle, a second roller which rotates about a second axle with its lower reach being above the lower reach of the first roller, a frame for securing said rollers and axles to the conveyor, and a safety bar secured to said frame in advance of and below said second roller proximate the supporting surface; said second roller being freely rotatable when free of load and being positioned to prevent contact between said first roller and the object which said second roller rotatably engages; said first roller being a support roller for transferring load exerted on said dolly to the supporting surface; said safety bar being clear of the supporting surface when the dolly is free of load and being adapted to rotatably engage the supporting surface and to prevent binding upon coming into contact therewith when the dolly is under load.

4,194,450

RAILWAY HOPPER CAR DOOR OPERATING MECHANISM

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 27, 1977, Ser. No. 864,342

Int. Cl.[2] B61D *7/04, 7/06, 7/18, 7/26*

U.S. Cl. 105—253 **10 Claims**

1. A bottom dump railway hopper car having an underframe and a hopper having a pair of laterally spaced bottom discharge openings and a pair of discharge gates associated therewith hinged from said hopper for movement between open and closed positions, the improvement comprising a gate operating mechanism operatively associated therewith comprising:

an actuating shaft rotatable about its longitudinal axis in a first direction to open and a second direction to close said discharge gates and located between the ends of said hopper car,

lever means rigidly affixed to said actuating shaft and extending outwardly therefrom,

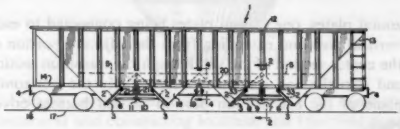
vertical levers pendulously connected to said underframe of said hopper car and having pivot means attaching said vertical levers and having lower ends,

linkages operatively connecting said lever means to each vertical lever in order to swing said vertical levers outward when said lever means rotate in said first direction,

strut means having first and second ends, said first ends being pivotally connected to the lower ends of said vertical levers, and

said discharge gates hingly connected to said hopper and having a pivotal connection with the second ends of said strut means.

10. A bottom dump railway car having an underframe and a hopper having discharge openings arranged in pairs on opposite sides of the car center sill and swinging gates associated therewith, said swinging gates being hinged from said hopper



for movement between open and closed positions and to swing toward the adjacent swinging gate of the associated pair, an improved swinging gate operating mechanism including:

a selectively movable actuating member mounted on the underframe,

pivot means attaching a vertical lever to the car underframe and disposing the vertical lever for transverse swinging movement away from the center sill to open the swinging gates and toward the center still to close the swinging gates;

linkage means operatively connecting the acutating member and said vertical lever such that movement of the actuating member causes the vertical lever to swing,

said vertical lever having a lower portion; and

strut means extending in opposite directions from the lower portion of the vertical lever and connecting the vertical lever and associated swinging gates, whereby selective movement of said vertical lever causes said strut means to be drawn in the direction of movement, thereby opening and closing said discharge openings.

4,194,451

RAILWAY CAR CENTER SILL

James L. Dehner, Poway, Calif., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 27, 1978, Ser. No. 881,304

Int. Cl.[2] B61D *17/00*

U.S. Cl. 105—416 **6 Claims**

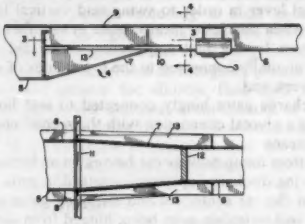
1. A center sill for a railway car comprising a center section, opposite end sections, and transition sections between said center and end sections,

each of said sections including laterally spaced vertical webs and top and bottom cover plates fixed to said webs,

said center section being of greater width and depth than said end sections with said bottom cover plate extending horizontally along said center section and sloping upwardly therefrom through said transition section and continuing horizontally outwardly along said end sections, whereby said bottom cover plate is bent at the ends of each of said transition sections, said vertical webs extending longitudinally along said center section parallel to one another and sloping inwardly toward one another through said transition sections and continuing parallel to

one another along said end sections, whereby said vertical webs are also bent at the ends of each of said transition sections, and

means for reinforcing the bent portions of said bottom cover plate and said vertical webs at the ends of each transition section including a pair of longitudinally extending hori-



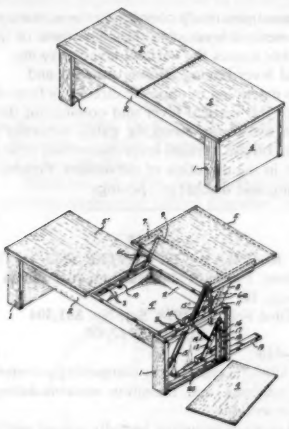
zontal plates, one of said plates being connected to each vertical web and extending from the adjacent portion of the center section of the sill through the transition section and into the end section in substantially the horizontal plane of the end section portion of said bottom cover plate.

4,194,452

CONVERTIBLE TABLE

William H. Crowther, 4605 State Route 2, Everett, Wash. 98205, and Gregory A. Carpenter, 5325 - 89th St. NE., Marysville,, Wash. 98270

Filed Jun. 12, 1978, Ser. No. 914,442
Int. Cl.[2] A47B *11/00, 81/00*
U.S. Cl. 108—138 **15 Claims**



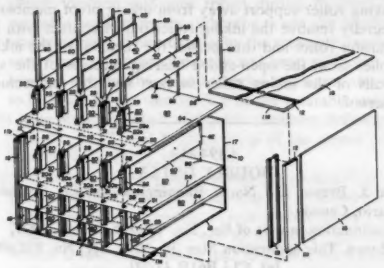
1. A convertible table comprising a table base for engaging a supporting surface, a tabletop normally supported in horizontal position overlying said table base, means connecting said top and said base enabling shifting of said top between its normal position principally over said base and a position in which said top is displaced laterally at least partially offset from said base, a stabilizer projectable outward from said base to deter tipping of the table, and actuating means for projecting said stabilizer automatically by shifting of said top to offset position.

4,194,453

SAFE DEPOSIT BOX NESTS AND METHOD OF CONSTRUCTING SAME

Larry I. Cutter, Cedar Rapids, Iowa, assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Dec. 8, 1977, Ser. No. 858,740
Int. Cl.[2] E05G *1/08*
U.S. Cl. 109—56 **6 Claims**

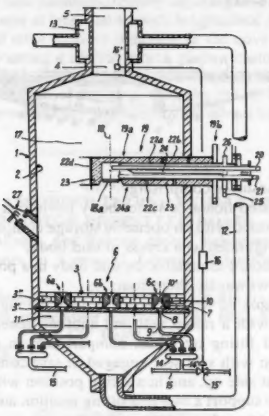


1. In safe deposit box nest construction incorporating one or more modular assemblies, each assembly including: an outer rectangular housing having an open front and top, bottom, side and rear walls and forward framing having bottom, side and top members forming separate forward extensions of the respective housing bottom, side and top walls, the forward framing defining the front of the housing; the housing containing a plurality of laterally and vertically adjacent safe deposit box compartments extending from the housing rear wall and opening through the front of the housing; the compartments being at least partially formed first by a plurality of parallel horizontally spaced vertical posts and separate partitions with the partitions extending rearwardly from the posts, the posts and partitions being divided into laterally spaced sets thereof with the posts and partitions of each set being in vertical alignment, and second by one or more parallel vertically spaced horizontal shelves of metallic sheet material, the posts and shelves forming forward edge portions of the compartments with each of the shelves extending between and separating vertically adjacent posts and partitions; and doors closing the fronts of the compartments, each door being hinged about a vertical axis to one of the posts, the improvement comprising: an extruded metallic member of uniform cross-section forming each post, the posts of each set thereof including integrally formed vertically aligned first channels longitudinally therethrough disposed between forward and rearward edge portions of said posts and integrally formed vertically aligned second channels longitudinally therethrough disposed rearwardly of the first channels and opening through the rear of said posts, the partitions associated with said set of posts having integrally formed forward edge portions slidably receivable in interlocking engagement with the second channels; a fold of said sheet material rearwardly upon itself of uniform thickness and forming the forward edge portion of each shelf, vertically adjacent posts and doors being separated by said folds; a post locating member slidable in and extending through the first channels and the folds of the shelves, the first channels and the post locating members providing an interlocking engagement therebetween effective to locate the posts of each set thereof against movement relative to the shelves without the need of additional fastening means between the posts and the post locating members, the uppermost and lowermost ends of the posts of each set butting against the top and bottom framing members respectively; and means securing the uppermost and lowermost ends of the post locating members to the top and bottom framing members.

4,194,454
METHOD FOR INCINERATING SLUDGES

Jean Lalanne; Jean-Pierre Nivert, both of Artix, and Daniel Tarascou, Pau, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Sep. 26, 1978, Ser. No. 946,092
Claims priority, application France, Sep. 29, 1977, 77 29264
Int. Cl.[2] F23G 5/12
U.S. Cl. 110—238 10 Claims



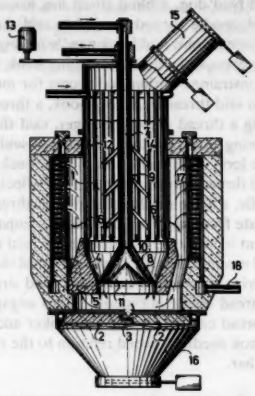
1. A method for incinerating sludge, comprising the steps of:
delivering a mixture of combustible gas with a large amount of excess air to a plurality of locations distributed over the lower part of an incineration zone;
initiating the combustion of said mixture;
injecting sludge into a limited space while imparting to said sludge a rotational motion about an axis, and causing said sludge to leave said space in the form of a sludge outlet jet, and finely pulverizing the sludge in the incineration zone;
evacuating the incineration products from the incineration zone by carrying them along with the gaseous combustion products;
said method being characterized by the further steps of:
rendering said mixture of combustible gas with excess air extremely homogeneous, prior to said step of delivering it to said locations in said incineration zone, and
directing plurality of air jets onto said sludge outlet jet in a substantially tangential direction with respect to the latter, for carrying out said step of finely pulverizing the sludge outlet jet.

4,194,455
METHOD OF AND FURNACE FOR BURNING WASTE MATERIAL

Heinz Mallek, Linnich-Tetz; Dorothee Ermisch, Jülich, and Werner Jablonski, Linnich-Tetz, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,515
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734973
Int. Cl.[2] F23G 5/12
U.S. Cl. 110—251 4 Claims

1. A method of burning waste material, which includes in combination the steps of: heating said waste material while preventing access of air thereto to thereby form waste gases and degasified waste including combustible gases; passing in a flow the thus formed waste gases and degasified waste to an area of combustion; constricting said flow in a location prior to its reaching said area of combustion while admixing fresh air at a below stoichiometric quantity ratio to said flow to destructively distill said waste material to form further combustible gases; admixing additional fresh air to said flow so that both

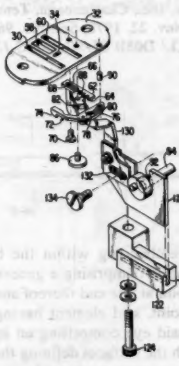


said waste gases and said degasified waste are combusted in common at said constricting location; and removing a portion of said combustible gases from said constricting location.

4,194,456
BLIND STITCH MECHANISM

William J. Edwards, Cranbury, and Herbert T. Hurler, Elizabeth, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,785
Int. Cl.[2] D05B 1/24
U.S. Cl. 112—176 6 Claims



1. In a sewing machine having a bed including a portion of said bed defining a stitch forming area, a cavity formed in said bed, a loop taker including a loop seizing beak rotatably journalled on a vertical axis in said bed, a needle bar reciprocatorily driven toward and away from said stitch forming area in timed relation to the rotation of said loop taker, said needle bar having fastened thereto a thread carrying needle, a feed dog having at least one component of motion adjustable by operator influenced motion varying means for moving fabric toward and away from said stitch forming area in timed relation to the reciprocation of said needle bar, a removable blind stitch throat plate having at least one aperture for accommodating said feed dog located at said stitch forming area of said bed and a needle slot for accommodating said needle, a

feed drive shaft rotatably driven in timed relation to the reciprocation of said needle bar, feed dog motion imparting means driven by said feed drive shaft for imparting fabric feeding motion to said feed dog, a blind stitch mechanism characterized by: a hook needle carried parallel to said throat carrying needle by said needle bar, said hook needle having a body with a longitudinal recess and a thread engaging hook, a latch member slidably constrained within said recess for motion toward and away from said thread engaging hook, a thread deflecting member having a thread engaging finger, said thread deflecting member being pivotally carried beneath said throat plate for engaging a loop of thread seized by the beak of said loop taker from said thread carrying needle and deflecting it around said hook needle, a drive mechanism for said thread deflecting member separate from said feed dog motion imparting means, and independent of said operator influenced feed motion varying means, and means drivingly connecting said thread deflecting member drive mechanism with said feed drive shaft for driving said thread deflecting member into engagement with said loop of thread carried by said loop taker and around the body of said hook needle in timed relation to the reciprocation of said needle bar.

4,194,457

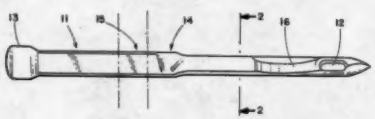
TUFTING MACHINE NEEDLES

Ronald Parsons, Blackburn, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Nov. 22, 1978, Ser. No. 963,093

Int. Cl.[2] D05B *85/00*; D05C *15/00*

U.S. Cl. 112—222 **2 Claims**



1. A needle for embedding within the body of a tufting machine needle module comprising a generally flat elongated element having a point at one end thereof and a yarn receiving eye adjacent said point, said element having a width greater than its thickness, said eye comprising an aperture extending transversely through the surfaces defining the thickness, a first region on non-uniform cross-sectional form within that longitudinal extent of the needle remote from the point intended for location within the body of the module, said first region comprising a localized region of increased width and reduced thickness relative to the transverse dimensions of an adjacent part of the elongate element, a pick-up area adjacent the eye, and a second region having, in at least one direction, a locating means defined by a predetermined transverse dimension intermediate the first region and the said pick-up area, said first and second regions lying substantially in the same plane, the said element being twisted intermediate the second region and the pick-up area to provide a set whereby that part of the element which provides the pick-up area lies in a plane inclined at a small acute angle relative to the plane of the first and second regions.

4,194,458

WINDSURFER WITH AUXILIARY PROPULSION EQUIPMENT

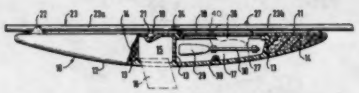
Manfred Messing, Reutlingen, Fed. Rep. of Germany, assignor to Lotte Kronwitter, nee Staiber, Guenznerg, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,854

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1976, 2652129

Int. Cl.[2] B63H *9/04*

U.S. Cl. 114—39 **10 Claims**



1. A windsurfer comprising:

an elongated floatable surfer body having an upper surface and formed with an openable storage compartment which is configurated as a recess in said body;

a daggerboard mountable on said body in a position projecting downwardly therefrom;

a removable lid formed as a flat plate having one side provided with a raised seat and another generally flat side, said lid fitting over said compartment in a windsurfing position with said seat engaged in said compartment and said flat side up, and in a riding position with said seat up so as to support a user in a sitting position and said flat side turned toward said compartment;

a mast securable to said upper surface of said body;

a boom secured to said mast; and

means engageable in water supporting said body for propelling said body in the water and storable in said compartment, said means for propelling including two paddles receivable in said compartment and each having a respective handle, said mast being formed at its ends with recesses each adapted to snugly receive a respective paddle handle in such a position that said mast with said paddles in said recess is a double-blade kayak-type paddle.

4,194,459

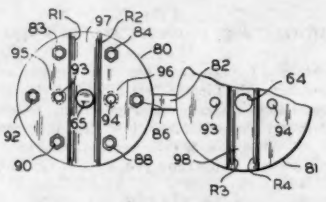
BOATS HARDWARE SYSTEM

Walter E. Lisowski, Addison, Ill., assignor to Helm Products, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 761,793, Jan. 24, 1977, abandoned. This application Sep. 19, 1977, Ser. No. 834,416

Int. Cl.[2] B63B *9/00*

U.S. Cl. 114—221 R **6 Claims**



1. A hardware system for boats which resists torque tending to rotate said hardware around a rail comprising a hinged pair of opposing massive plastic discrete unitary members, said opposing members including mounting means distributed around the periphery thereof, whereby a device may be mounted on one of said opposing members, each of said discrete members having a single straight semi-circular cove consisting of a single smooth internal bore with no branching

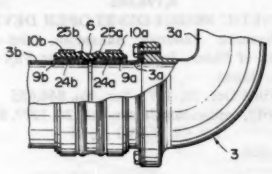
channels formed across a width of said plastic unit, said straight cove being shaped and dimensioned to fit over a correspondingly shaped exclusively straight section of a boat's rail, friction means comprising a rubber-like plug embedded in a hole located at substantially the central point of the bottom of said cove for creating torque-resisting friction between said massive plastic members and said boat's rail, and clamping means comprising a bolt with a large diameter head which can be tightened by hand without requiring tools for clamping said rail in said cove with a force which compresses said plug between said members and said rail, said bolt extending through both of said members, thereby securing said members on said rail wherein at least one smooth longitudinal rib means is formed in said cove to more precisely fit the cove to a rail, said rib means forming a section which gives a customized fit for said cove if the rail has a cross section that does not exactly match the cross section of the cove, whereby the rib means fill the space between said cove and said rail but do not bite into or mar the rail.

4,194,460

VIBRATION ABSORBED ENGINE EXHAUST MEANS FOR MOTOR PROPELLED BOATS

Masato Sato, Akashi, and Takemi Inoue, Kakogawa, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Ikuta, Japan

Filed Jan. 4, 1978, Ser. No. 866,911
Claims priority, application Japan, Jan. 13, 1977, 52-3601[U]
Int. Cl.² B63H *21/32*
U.S. Cl. 115—73 **7 Claims**



1. Motor-propelled boat comprising a boat hull, internal combustion engine means mounted on said boat hull through resilient mounting means and adapted to drive propulsion means, said engine means including body means, exhaust means connected with said body means, and cooling water jacket means formed in said body means for passing cooling water therethrough, said exhaust means including first pipe means rigidly connected with the body means and second pipe means connected with the first pipe means through resilient connecting means, said cooling water jacket means having outlet means, connected with the first pipe means so that the cooling water which has passed through the jacket means is discharged into the first pipe means, said second pipe means being further supported through resilient support means by said body means of the engine means.

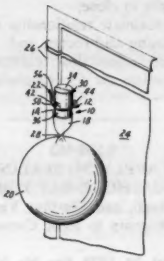
4,194,461

DOOR ALARM TOY

James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

Filed Apr. 19, 1978, Ser. No. 897,791
Int. Cl.² A63H *5/00*; G08B *13/08*
U.S. Cl. 116—77 **6 Claims**

1. An assembled door alarm toy comprising in combination:
a resilient elastic balloon having a neck portion adjacent an opening;
an air operated whistle having an air inlet flue and a flange around said air inlet flue inserted in the opening of said balloon with the neck of the balloon stretched about said flange; and
means attached to said whistle adapted to be inserted and compressed in the space between a door and a frame around the door for frictionally engaging the adjacent surfaces of both the door and the frame with one side of the flange positioned along the outer surface of the door or frame so that with said balloon inflated and twisted adjacent said flange, and said means attached to said whistle inserted in said space with a portion of the side surface of the balloon spaced from the flange pressed against and



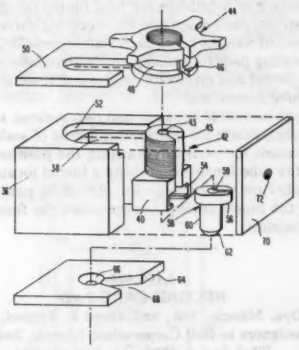
in frictional engagement with the outer surface of the door or frame, friction between said side surface of the balloon and the door or frame will prevent the balloon from rotating to remove the twist in the balloon and said friction and twist will provide the only means for maintaining the balloon in an inflated condition until the door is opened, whereupon the toy will fall, the balloon will untwist and deflation of the balloon will sound the whistle.

4,194,462

OPTICAL WAVEGUIDE COATING ASSEMBLY

Daniel H. Knowles, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,509
Int. Cl.² B05C *3/02*; C03C *25/02*; C03B *37/00*; B05C *3/12*
U.S. Cl. 118—405 **11 Claims**



1. A coating applicator for coating the surface of a moving optical waveguide of indeterminate length, comprising:
a coating die having an aperture extending therethrough and defining a split extending from said aperture to one edge thereof to provide access to the aperture throughout its length, said die having a first tapered surface lying generally about the longitudinal axis of said aperture;
a housing for receiving said coating die, said housing defining a recess extending substantially throughout the length thereof and including means for locating said coating die so that said split is in registration with said recess;

a die closing member adjacent said housing recess and defining an opening and a slot extending from the opening to the edge thereof and registering with the recess of said housing, said member further including a second tapered surface disposed about said opening and mating with said first tapered surface of said coating die;

pressure developing means associated with said housing for urging said coating die toward said die closing member whereby said first and second tapered surfaces cooperate to cause said split to close;

cover means in proximate relationship with said applicator housing and closing said recess; and

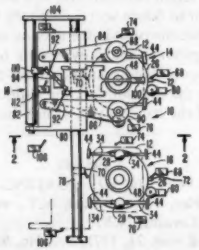
a reservoir coupled in fluid flow relationship with the aperture of said coating die for supplying coating material thereto.

4,194,463

APPARATUS FOR APPLYING SEALING MATERIAL TO A CATHODE-RAY TUBE

Laurence B. Kimbrough, and Marinus Van Renssen, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,611
Int. Cl.[2] B05C *5/02*
U.S. Cl. 118—409 **1 Claim**



1. An apparatus for applying a bead of sealing material to a sealing surface of a cathode ray tube funnel comprising:

two stations, each adaptable for receiving cathode ray tube funnels of various sizes, each station including a plurality of locating pads for holding and horizontally positioning a tube funnel and means for raising and lowering a cathode ray tube funnel, and

a carriage moveable between said two stations, said carriage including means for distributing a bead of sealing material and means for vertically locating the position of a cathode-ray tube funnel comprising a funnel locator pivotally mounted on the carriage for providing positive contact with the funnel sealing surface when the funnel is raised thereagainst.

4,194,464

RECORD CARE PAD

John F. Dye, Muncie, Ind., and Virgil F. Friebel, Longmont, Colo., assignors to Ball Corporation, Muncie, Ind.

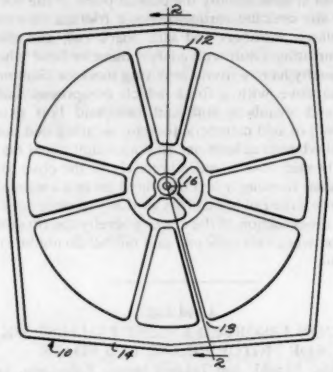
Filed Jan. 3, 1978, Ser. No. 866,352
Int. Cl.[2] B05C *13/02*
U.S. Cl. 118—501 **41 Claims**

1. Apparatus for positioning a phonograph record at a stationary location during treatment with a fluid without damaging said record, said apparatus comprising:

a base pad having dimensions larger than the dimensions of the largest record to be held stationary at said location, said pad being composed of a nonabrasive material;

friction means for preventing said record from sliding or rotating during said treatment; and

support means for preventing the lower surface of said record from resting in said fluid that may flow off of said record during said treatment, said support means including a plurality of raised coplanar pedestal portions attached to said pad, distributing over substantially the



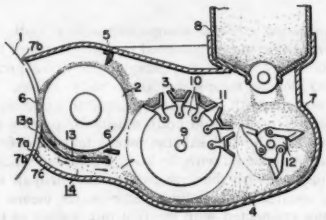
entire area of said pad covered by said record during said treatment, said portions being separated from each other so as to form interconnected channels therebetween.

4,194,465

MAGNETIC BRUSH DEVELOPER DEVICE

Takuzo Tsukamoto; Tamotsu Sakamoto, and Yoshikazu Okamoto, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1977, Ser. No. 846,655
Claims priority, application Japan, Feb. 24, 1977, 52-20726[U]
Int. Cl.[2] G03G *13/09*
U.S. Cl. 118—658 **2 Claims**



1. In a xerographic copying machine of the type having a rotatable photosensitive member, a developer housing positioned closely adjacent to the periphery of said rotatable photosensitive member, and a magnetic brush roll located within said developer housing opposite said rotatable photosensitive member, the improvement comprising:

at least one air current blade provided along the lower outer periphery of the surface of said magnetic brush roll and positioned to be adjacent at one end thereof to said rotatable photosensitive member and extending back into the interior of said developer housing to conduct the air stream above the surface of said magnetic brush roll toward the interior of said developer housing and to collect the boundary layer of air entrained by the rotation of said rotatable photosensitive member, said developer housing having an opening adjacent said rotatable photosensitive member and spaced from said air current blade so that an air circulating path is defined by the outer wall of said developer housing and said air current blade

whereby entrained air carrying excess toner is recirculated back into said developer housing; and

a developer carrying bucket located within said developer housing for supplying developer to said magnetic brush roll, said developer carrying bucket being composed of a plurality of U-shaped buckets mounted around two discs spaced within said developer housing on a rotary shaft, sufficient space between said two discs and among said plurality of U-shaped buckets being provided to permit free air flow, said air current blade extending to the vicinity of said developer carrying bucket.

4,194,466

ELECTROPHOTOGRAPHIC APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC CHARGE IMAGES

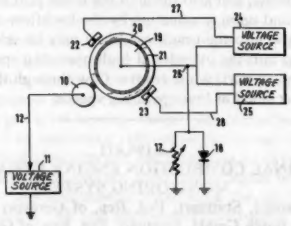
Helmuth Haberhauer, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,698

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2651646

Int. Cl.[2] G03G *13/09*

U.S. Cl. 118—657 **8 Claims**



1. Apparatus for developing latent electrostatic charge images, comprising

(a) image carrier means including a conductive backing layer, and a photoconductive layer for receiving a latent electrostatic charge image;

(b) magnetic developer means for depositing a developer mixture on said photoconductive layer;

(c) means establishing a potential difference between said magnetic developer means and said backing layer, including

(1) a first voltage source connected with said magnetic developer means; and

(2) voltage breakdown prevention means including a high-ohmic resistor connecting said backing layer with ground;

(d) charge corona means arranged adjacent said image carrier photoconductive layer;

(e) transfer corona means arranged adjacent said image carrier photoconductive layer; and

(f) second and third voltage sources including first terminals of one polarity connected with said backing layer, the second terminals of opposite polarity of said second and third voltage sources being connected with said charge corona means and with said transfer corona means, respectively.

4,194,467

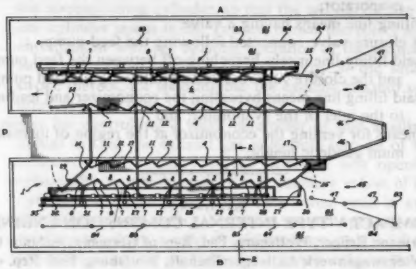
COW MILKING SYSTEM

Floyd P. Nielsen, and Bernard O. Anderson, both of Glendale, Ariz., assignors to Nielsen Industries, Inc., Phoenix, Ariz.

Filed Jun. 19, 1978, Ser. No. 916,633

Int. Cl.[2] A01K *1/12*

U.S. Cl. 119—14.03 **7 Claims**



1. A cow milking system comprising:

a. floor means having means defining an aisle, said aisle having:

(1) a milking side, and

(2) a head side;

b. a fixed fence disposed on said milking side;

c. means for supporting said fixed fence;

d. a moveable herring-bone fence

(1) disposed on said head side, and

(2) having means for engaging the shoulders of the cows; said fence being adapted to move as an integral unit; and

e. means for supporting said movable fence, and

f. means for moving said fence as a unit in and out of said aisle, whereby successive groups of cows of different sizes can be positioned advantageously relative said milking side by moving said fence, and said aisle can be widened temporarily for ingress and egress.

4,194,468

FORCED-FLOW BOILER INSTALLATION AND METHOD OF OPERATING THE SAME

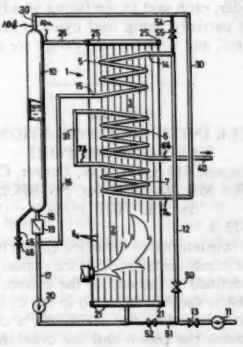
Walter Augsburger, Hettlingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 25, 1978, Ser. No. 936,944

Claims priority, application Switzerland, Sep. 2, 1977, 10719/77

Int. Cl.[2] F22B *35/14*

U.S. Cl. 122—406 ST **7 Claims**



1. A forced-flow type boiler installation comprising:

a feed pump;

an economizer;

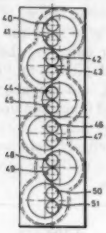
an evaporator;
a water separator;
said feed pump, economizer, evaporator and water separator being connected in series;
said separator having a water outlet and said evaporator having an inlet;
a circulation line means having a circulation pump leading from the water outlet of the separator to the inlet of the evaporator;
filling line means having a valve;
a closure valve connected following the feed pump;
said filling line meahs branching-off between the feed pump and the closure valve connected following the feed pump;
said filling line means bypassing the economizer and leading to the inlet of the evaporator; and
means for venting the economizer at the region of its maximum geodetic height.

4,194,469

COMPACT V-TYPE INTERNAL COMBUSTION ENGINE

Hermann Krüger, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,206
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2740173
Int. Cl.[2] F02B *75/22*
U.S. Cl. 123—54 R **5 Claims**



1. In a V-type internal combustion engine including a plurality of pistons and cylinders having a common cylinder head and a plurality of valves associated with the pistons and cylinders, said pistons acting on a crankshaft and said pistons and cylinders arranged in two banks, the cylinders of the first bank arranged interstitially with the cylinders of the second bank in a longitudinal direction, the improvement wherein each cylinder has at least one recess therein, one said recess for each adjacent cylinder, each said recess facing an adjacent cylinder and extending partially along said cylinder from the crankshaft-side thereof, and wherein said valves are arranged along a straight line.

4,194,470

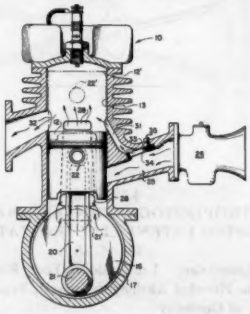
TWO-CYCLE INTERNAL COMBUSTION ENGINE HAVING BOOST PORT

Richard W. Magner, 613 S. Ivy Way, Denver, Colo. 80224

Filed Mar. 13, 1978, Ser. No. 886,028
Int. Cl.[2] F02B *33/04*
U.S. Cl. 123—73 A **6 Claims**

1. In a two-cycle internal combustion engine having a crankcase, a cylinder communicating with the crankcase, a combustion chamber defined at the end of the cylinder opposite the crankcase, a piston slidably mounted in the cylinder, a crankshaft rotatably mounted in the crankcase, a connecting rod extending between the piston and the crankshaft, a transfer port defined between the crankcase and cylinder, an inlet channel communicating with the crankcase at one end, with an air-fuel mixture providing means at the other end, and backflow timing means controlling communication of air-fuel mixture providing means and the crankcase, the improvement comprising:

a boost port defined between the inlet channel at a position between the air-fuel mixture providing means and the backflow timing means with the inlet channel being unobstructed between the air mixture providing means and the entrance to the boost port, the boost port extending to and communicating through the cylinder at a position above the piston crown when the piston is in a downstroke orientation; and



a valve means positioned at the boost port and oriented to permit flow only from the inlet channel and preclude flow in the opposite direction;

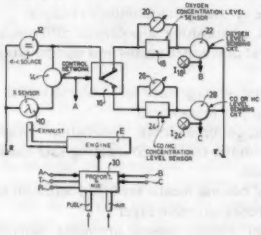
whereby an air-fuel mixture may flow from the air-fuel mixture providing means to the inlet channel into the crankcase, and also through the boost port into the cylinder, and upon termination by the backflow timing means of flow into the crankcase, flow may be selectively provided into the cylinder at high operating speeds through the boost port, while reverse flow through the boost port is precluded at low operating speeds.

4,194,471

INTERNAL COMBUSTION ENGINE EXHAUST GAS MONITORING SYSTEM

Detlef Baresel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1978, Ser. No. 882,177
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709215
Int. Cl.[2] F02B *75/10*
U.S. Cl. 123—119 EC **21 Claims**



1. Exhaust gas monitoring system to supervise the composition of exhaust gases emitted from an internal combustion engine (E)

comprising the combination of

a first exhaust composition sensor (**10**) located in sensing relation with respect to the exhaust gas stream from the

internal combustion engine and providing an output signal which changes between discrete values upon transition of the composition of the exhaust gases between reducing and oxidizing state;

and air-fuel ratio control means (30) connected to and controlled by the first sensor (10) and controlling the relative proportion of air and fuel applied to the engine (E),

with

a second exhaust composition sensor (18) located in sensing relation with respect to the exhaust gas stream from the internal combustion engine comprising a material having an electrical characteristic which changes in an analog manner as a function of the level of concentration of oxygen present in the exhaust gases;

and an oxygen level sensing circuit connected to and controlled by said second sensor (18) responsive to said change in the electrical characteristic and providing an oxygen level output signal (B) if said characteristic and hence the oxygen concentration level in the exhaust gases exceeds a predetermined limit.

19. Exhaust gas monitoring system to supervise the composition of exhaust gases emitted from an internal combustion engine (E)

comprising the combination of

a first exhaust composition sensor (10) located in sensing relation with respect to the exhaust gas stream from the internal combustion engine and providing an output signal which changes between discrete values upon transition of the composition of the exhaust gases between reducing and oxidizing state;

and an air-fuel ratio control means (30) connected to and controlled by the first sensor and controlling the relative proportion of air and fuel applied to the engine (E),

with

a second exhaust composition sensor (18) located in sensing relation with respect to the exhaust gas stream from the internal combustion engine comprising a material having an electrical characteristic which changes in an analog manner as a function of the level of concentration of oxygen present in the exhaust gases;

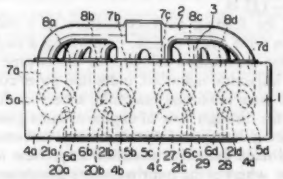
and an oxygen level sensing circuit (22) connected to and controlled by said sensor (18) responsive to said change in the electrical characteristic and providing an oxygen level output signal, said oxygen level output signal being connected to and additionally controlling the air-fuel ratio control means (30) and additionally controlling the relative proportion of air and fuel applied to the engine.

4,194,472

EXHAUST GAS RECIRCULATION SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Masuo Amano, Okazaki, and Toshio Tanahashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 21, 1978, Ser. No. 888,733
Claims priority, application Japan, Dec. 2, 1977, 52-144674
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **6 Claims**



1. A multi-cylinder engine having a plurality of cylinders, each having an intake valve and an exhaust valve, said engine comprising:

a common exhaust gas passage;

a plurality of exhaust gas branches, each interconnecting its respective cylinder with said common exhaust passage;

a plurality of auxiliary valves, each of which is located in its respective exhaust gas branch and opens in the latter half of the exhaust stroke and at the end of the intake stroke of the corresponding cylinder, so that the auxiliary valve of one cylinder opens in the exhaust stroke thereof in synchronization with the opening operation of the auxiliary valve of another cylinder, which opens in the intake stroke thereof, for spouting out the exhaust gas into said other cylinder from said one cylinder; and

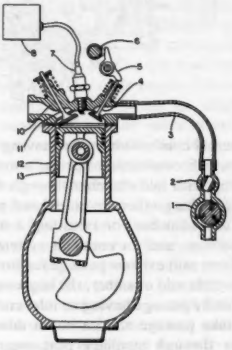
means for controlling a valve parameter of said auxiliary valves to feed the exhaust gas uniformly into all of the cylinders, said auxiliary valves having a first opening relationship in which a pair of said auxiliary valves of the cylinders arranged adjacent to each other open in synchronization with each other and a second opening relationship in which a pair of said auxiliary valves of the cylinders arranged not adjacent to each other open in synchronization with each other, said controlling means causing the difference in said valve parameter between the auxiliary valves having said first opening relationship and the auxiliary valves having said second opening relationship, and wherein said valve parameter is the valve lift, the valve lift of the auxiliary valves which have said first opening relationship being smaller than that of the auxiliary valves which have said second opening relationship.

4,194,473

FOUR-CYCLE SPARK IGNITION INTERNAL COMBUSTION ENGINE

Ichiro Hidaki, 473-1, Yoshiocho, Miyakonojo-shi, Miyazaki, Japan

Filed Apr. 20, 1978, Ser. No. 898,128
Claims priority, application Japan, Apr. 23, 1977, 52/47690
Int. Cl.[2] F07M *25/06*
U.S. Cl. 123—119 A **5 Claims**



5. In a high-compression, four-cycle, spark ignition, reciprocating piston-type, internal combustion engine having a cylinder, a cylinder head forming a combustion chamber with said cylinder, a piston reciprocable in said cylinder, intake and exhaust ports in said head communicating with said cylinder and intake and exhaust valves for opening and closing said intake and exhaust ports, the improvement which comprises: said engine has a scavenging gas passageway in the cylinder head and said scavenging gas passageway has a scavenging gas inlet port at one end thereof communicating with the upper end of the cylinder; a poppet valve in said scavenging gas inlet port for opening and closing communication between said scavenging gas passageway and said cylinder; a gas flow regu-

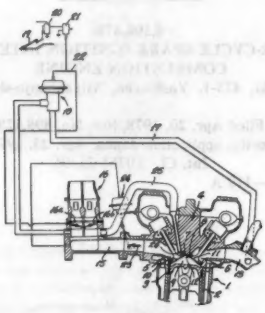
lator valve in said scavenging gas passageway; a scavenging gas pump having an outlet connected to the other end of said scavenging gas passageway, said scavenging gas pump having an inlet connected to receive cooled exhaust gas from the engine; and means for regulating the spark ignition point so that spark ignition occurs at a time close to but shortly after the knocking limit ignition point of the fuel-gas mixture used in the engine whereby to achieve improved thermal efficiency without knocking.

4,194,474

EGR RECIRCULATION AT LOW LOAD IN INTERNAL COMBUSTION ENGINES

Yoshinori Endo, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 839,359, Oct. 4, 1977, abandoned. This application Jun. 1, 1978, Ser. No. 911,299
Claims priority, application Japan, Mar. 9, 1977, 52-106029
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **9 Claims**



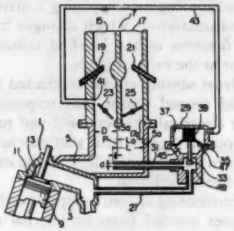
1. In an internal combustion engine having a variable volume chamber in which combustion occurs, a main intake passage communicating with said chamber through a main intake port for delivering a charge thereto, an exhaust passage communicating with said chamber for receiving a burned charge exhausted therefrom, and an emission system for discharging exhaust gas from said exhaust passage for further treatment by combustion within said chamber, the improvement comprising an auxiliary intake passage having an inlet communicating with said main intake passage and an outlet communicating with said chamber through auxiliary port means, said auxiliary intake passage having an effective cross-sectional area substantially less than the effective cross-sectional area of said main intake passage for causing a given mass flow of charge through said auxiliary intake port to enter said chamber at a significantly greater velocity, throttle valve means for controlling the ratio of flow into said chamber through said main intake port to the flow into said chamber through said auxiliary intake port means, and means for delivering exhaust gases from said emission system to said main intake passage in a location to minimize the effects of pulsation thereof and for introduction at a high velocity into said chamber through said auxiliary intake port means under the control of said throttle valve means.

4,194,475

INTERNAL COMBUSTION ENGINE WITH AN EXHAUST GAS RECIRCULATION SYSTEM

Junichi Saiki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 23, 1978, Ser. No. 918,381
Claims priority, application Japan, Apr. 25, 1978, 53-48326
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **4 Claims**



1. An internal combustion engine with an exhaust gas recirculation system comprising:

a carburetor which is communicated with an intake air supply and provided with a primary system and a secondary system;

an intake passage, the entrance portion of which being communicated with said carburetor and which is branched into a plurality of exit portions at the branch portion thereof, said exit portions being communicated with combustion chambers of said engine, respectively;

an exhaust passage which is communicated with said engine for discharging the exhaust gas;

an exhaust gas supply pipe which is disposed on a wall of the intake passage located between said entrance portion and said branch portion and communicated with said exhaust passage for recirculating a part of the exhaust gas, the top end of said exhaust gas supply pipe projecting from said wall and being opened to a space having a predetermined positional relationship with the prolongation of a wall of said primary system; and

said primary system of said carburetor is located nearer to an engine body than said secondary system, said secondary system of said carburetor is located adjacent to said primary system, and said wall on which said exhaust gas supply pipe is disposed is located farther from said engine body than said primary system.

4,194,476

DEVICE FOR FEEDING OTTO CYCLE ENGINES WITH LEAN COMBUSTIBLE MIXTURES

Claudio Lombardi, Alessandria, and Lorenzo Belletti, Turin, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

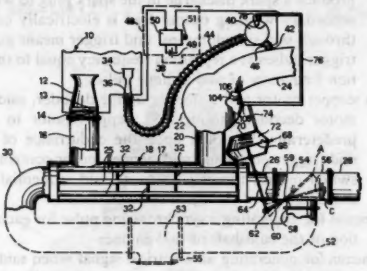
Filed Jun. 6, 1978, Ser. No. 913,157
Claims priority, application Italy, Jun. 9, 1977, 68336 A/77; Mar. 30, 1978, 67702 A/78
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 H **6 Claims**

1. Device for feeding air/fuel mixture to a multicylinder spark ignition Otto cycle engine, comprising a carburettor, a main induction manifold, a carburettor outlet pipe connected to said main induction manifold, induction pipes communicating with said main induction manifold, a heat exchanger having passages for through flow of engine exhaust gases, the heat exchanger being interposed between said carburettor outlet pipe and said main induction manifold to preheat mixture fed to the engine, wherein the improvements comprise:

an auxiliary induction manifold adjacent said main induction manifold and having outlet pipes communicating with the said induction pipes;

an auxiliary pipe connecting the said auxiliary induction manifold to said carburettor;

an electrical resistance heating element associated with said auxiliary pipe;



means for feeding combustible mixture from said carburettor in the idling state of the engine only through said auxiliary pipe, and

a timer switch for energising said resistance heating element for a predetermined time interval following operation of said switch.

4,194,477

DEVICE FOR ADMISSION OF SECONDARY AIR TO INTERNAL COMBUSTION ENGINE INTAKE

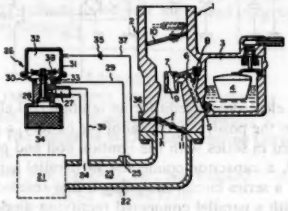
Keiichi Sugiyama, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 27, 1978, Ser. No. 890,678

Claims priority, application Japan, Apr. 14, 1977, 52-45773

Int. Cl.[2] F02M *23/04*

U.S. Cl. 123—124 R **3 Claims**



1. A secondary air admission device for an engine provided with a control valve for admitting secondary air into a suction passage downstream from a carburetor which includes a throttle valve in a bore downstream from said carburetor, characterized in that the control valve is constituted by a first diaphragm chamber communicated with the suction passage, a valve member opened and closed by the pressure variation in said first diaphragm chamber, and a second diaphragm chamber isolated from the first diaphragm chamber by a diaphragm which supports the valve member, a vent port is opened in said bore, said vent port being communicated with said second diaphragm chamber through a check valve, said vent port opening into said bore at an intermediate portion between the throttle valve position at the time of fast idle opening and the throttle valve position at the time of hot idle opening.

4,194,478

AIR-FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

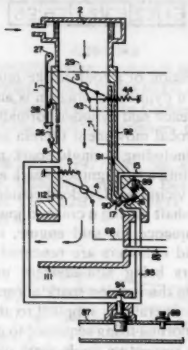
Masaharu Sumiyoshi; Setsuro Sekiya; Katsuhiko Motosugi, all of Toyota; Junzo Uozumi, Nagoya; Tsuneo Ando, Chiryu; Yuzo Takeuchi, and Mikio Minoura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd, Ohbu, both of, Japan

Filed Apr. 25, 1978, Ser. No. 900,011

Claims priority, application Japan, Apr. 27, 1977, 52-48930

Int. Cl.[2] F02M *39/00, 7/00*

U.S. Cl. 123—139 AW **14 Claims**

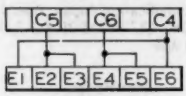


1. An air-fuel ratio control system for an internal combustion engine comprising an intake conduit, a throttle valve disposed in said intake conduit, a fuel discharge port opened to said intake conduit and a fuel feed conduit for supplying fuel to said discharge port; said control system comprising an air valve disposed in said intake conduit upstream of said throttle valve thereby to define an air pressure chamber between said throttle valve and said air valve in said intake conduit; control means for controlling the opening area of said air valve in response to variation in pressure in the air pressure chamber defined between said throttle valve and said air valve so as to maintain the pressure in the air pressure chamber substantially constant; a variable throttle means disposed in said fuel feed conduit for controlling the quantity of fuel to be supplied through said feed conduit to said discharge port; means for interlocking said variable throttle means with said air valve in such a way that the flow sectional area of said variable throttle means is always maintained substantially in proportion to the opening area of said air valve; a fuel pressure differential device composed of a first pressure chamber subjected to a pressure equivalent to the pressure in said fuel feed conduit downstream of said variable throttle means, a second pressure chamber, means for maintaining said second pressure chamber at a pressure different from the pressure in said first pressure chamber and a constant differential pressure valve disposed in said fuel feed conduit downstream of said variable throttle means and responsive to variation in the pressure difference between said first and second pressure chambers for controlling the pressure in said feed conduit downstream of said variable throttle means at a pressure having a predetermined difference from the pressure in said second pressure chamber; a first fluid source maintained at a high pressure; a second fluid source maintained at a low pressure; a fluid circuit arranged in such a way that fluid flows from said first fluid source to said second fluid source via said second pressure chamber; and at least two flow control means disposed in said fluid circuit, each being responsive to variation of one of parameters representing environmental and/or operating conditions of said internal combustion engine for controlling fluid flow in said fluid circuit thereby to correct the pressure in said second pressure chamber.

4,194,479
STACKARUK ENGINE

Arthur Stackaruk, 194 Church St., Bowmanville, Ontario, Canada

Filed Mar. 17, 1977, Ser. No. 778,626
Int. Cl.[2] F02P 1/00
U.S. Cl. 123—148 C 13 Claims

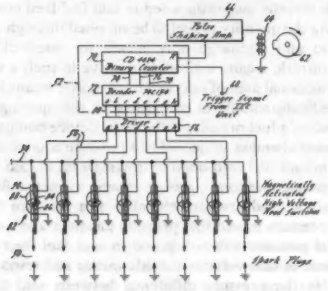


1. In the combination of a four stroke internal combustion engine comprising n cylinders, where n is an even number in the range of 4 to 8, each said cylinder normally having a piston mounted for reciprocal movement therein and ignition spark generating means including a single spark plug in each said cylinder for generating a first ignition spark as each respective said piston is in the vicinity of top dead center on the compression stroke, a crankshaft having n cranked journals establishing a normal firing sequence for said engine, the improvement wherein half of said cylinders are rendered inoperable, said inoperable cylinders being non-adjacent in said firing sequence, and wherein the ignition spark normally supplied to a cylinder rendered inoperable is supplied to an adjacent operable cylinder in said normal firing sequence to generate a second ignition spark at the respective single spark plug with an angular retard within the range of about 90° to about 180° from said first spark, as measured at the engine flywheel.

4,194,480
VOLTAGE DISTRIBUTOR FOR A SPARK IGNITION ENGINE

William G. Rado, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1977, Ser. No. 862,707
Int. Cl.[2] F02P 1/00
U.S. Cl. 123—148 ND 1 Claim



1. A voltage distributor for a spark ignition internal combustion engine having a camshaft, a plurality of combustion chambers, and at least one spark plug for each of said combustion chambers, said distributor supplying voltage to said spark plugs in a sequence corresponding to the firing order of said engine, said distributor comprising:

an ignition coil having primary and secondary windings, said secondary winding having an output lead;

switch means having a plurality of output leads each of which is connected to a different one of said spark plugs, said switch means being controllable to cause said secondary winding output lead sequentially to make and break electrical contact with said switch means output leads in a sequence corresponding to the firing order of said engine;

trigger means, coupled to said primary winding, for causing voltage pulses to occur on said secondary winding output lead, said voltage pulses having a magnitude sufficient to produce a spark discharge in the spark plug to which said secondary winding output lead is electrically connected through said switch means, said trigger means generating trigger pulses at a repetition frequency equal to the repetition frequency of said voltage pulses;

a stepper motor and a stepper motor decoder, said stepper motor decoder causing said stepper motor to rotate a predetermined amount upon the occurrence of each of said trigger pulses and said stepper motor controlling said switch means, thereby, to cause said sequential making and breaking of electrical contact;

means for generating a synchronizing pulse for each revolution of the camshaft of said engine;

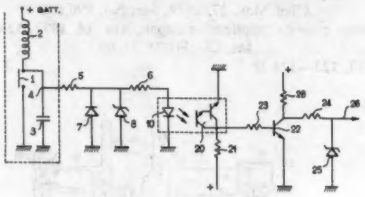
means for generating an electrical signal when said stepper motor is in a predetermined position relative to a predetermined switch means output lead; and

gate circuit means for allowing clock pulses to be applied to said stepper motor decoder until said synchronizing pulse and electrical signal simultaneously occur.

4,194,481
BREAKER SIGNAL PICK-UP AND SHAPING CIRCUIT

Marc Leblanc, Montreuil, and Bernard Lepretre, Boulogne, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Brillancourt, France

Filed Jan. 10, 1978, Ser. No. 868,375
Claims priority, application France, Jan. 21, 1977, 77 01721
Int. Cl.[2] F02P 1/00
U.S. Cl. 123—148 E 3 Claims



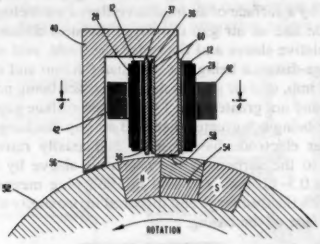
1. An electronic circuit for an ignition coil electrically connected to the positive terminal of the battery, a circuit breaker connected in series with the ignition coil and positive battery terminal, a capacitor connected in parallel with said circuit breaker, a series circuit including a first resistor connected in series with a parallel connected rectifying diode and calibrating first Zener diode, said series circuit connected in parallel with said capacitor, an optical coupler comprising a light emitting means for emitting light and a light receiving means for receiving the emitted light from the light emitting means, said light emitting means connected in series with a second resistor, said serially connected light emitting means and second resistor connected in parallel with said parallel connected rectifying diode and calibrating Zener diode combination, a transistor having a base, emitter, and a collector, said light receiving means connected to the base of said transistor, said transistor emitter connected to a ground, and said transistor collector connected to the positive terminal of the battery, and a third resistor connected in series with a second Zener diode, said serially connected third resistor and second Zener diode connected in parallel with the emitter and collector terminals of the transistor.

4,194,482

SELF GENERATING IGNITION SYSTEM

Robert V. Jackson, Los Angeles, Calif., assignor to McCulloch Corporation, Md.

Filed May 23, 1978, Ser. No. 908,720
Int. Cl.[2] F02P 1/00
U.S. Cl. 123—148 CC 15 Claims



1. A magneto ignition system for use with an internal combustion engine, comprising:

a first core,

a first winding mounted on said first core across which a primary voltage is generated responsive to flux in said first core,

switching means connected across said first winding for completing a circuit through said first winding,

a secondary high voltage winding mounted on said first core for generating a voltage output for said ignition system,

a second core positioned next adjacent and spaced from said first core,

a second winding mounted on said second core,

a rotor having a permanent magnet for producing varying flux through said first and second cores to induce voltages across the respective first winding and second winding,

means responsive to the voltage generated in said second winding for interrupting the flow of current through said circuit means, and

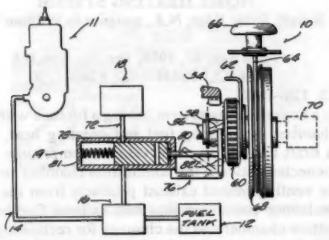
means responsive to said varying flux through said first core for simultaneously generating (i) a reverse bias voltage in series with said voltage responsive means applied across said switching means and (ii) a forward bias voltage applied across said switching means in synchronism with said primary voltage to increase the rate of interruption of current therethrough.

4,194,483

AUTOMATIC FUEL PRIMING SYSTEM

Richard M. McChesney, Waukegan, and Robert K. Turner, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 21, 1977, Ser. No. 835,417
Int. Cl.[2] F02M 1/16
U.S. Cl. 123—187.5 R 14 Claims



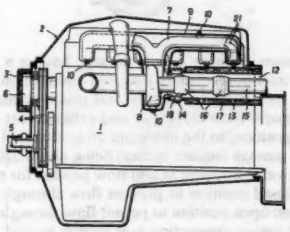
1. An engine comprising a combustion chamber, a source of pulsating pressure, a fuel source, a starter mechanism, fuel conduit means connected in communication with said fuel source for introducing fuel into said combustion chamber, fuel pumping means connected in communication with said fuel conduit means and operable for pumping fuel through said fuel conduit means in response to said pulsating pressure, pulse conduit means connecting said fuel pumping means in communication with said source of pulsating pressure, valve means connected in communication with said pulse conduit means for controlling the admission of said pulsation pressure to said fuel pumping means, and means for selectively operating said valve means when said starter mechanism is activated.

4,194,484

INTERNAL COMBUSTION ENGINE HAVING A NOISE SUPPRESSING ENCAPSULATION

Karl Kirchweger; Heinz Fachbach; Gerhard Thien, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Dec. 6, 1977, Ser. No. 858,030
Claims priority, application Austria, Dec. 10, 1976, 9171/76
Int. Cl.[2] F02B 77/00; F01P 1/02
U.S. Cl. 123—195 C 8 Claims



1. An internal combustion engine having an exhaust system, a noise-suppressing encapsulation and a blower for ventilation of said encapsulation, comprising: cooling air ducts being formed within the encapsulation by means of partitions through which the cooling air flows in two partial streams, one of said cooling air ducts forming a first partial air stream enclosing and cooling the engine, the other cooling air duct being imperviously divided from the first, and forming a second partial air stream enclosing and cooling the parts of the exhaust system arranged within the encapsulation including the exhaust pipe and the exhaust manifold all of said exhaust system parts being surrounded by a jacket spaced away from the exhaust pipes, said second partial air stream flowing through a space formed between said parts of the exhaust system and said jacket, the jacket being secured to the engine leaving gaps in the vicinity of the securing points for the entry of the cooling air, said jacket being made of sheet metal and simultaneously serving as a partition for the separation of said two partial air streams, and said jacket leading the air stream within it separated from the other air stream out of the encapsulation.

4,194,485

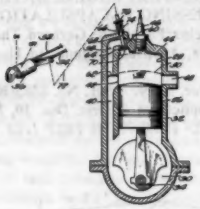
THROTTLING PASSAGEWAY TO DECREASE COAST-DOWN TIME OF LAWN MOWER ENGINES

Donald K. Stephenson, Sussex, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 27, 1978, Ser. No. 928,554
Int. Cl.[2] F02B 77/08
U.S. Cl. 123—198 DC 7 Claims

1. A lawn mower comprising a frame, a rotatable cutter blade supported on said frame, an internal combustion engine supported on said frame and including an engine block having a cylinder, a piston mounted inside said cylinder for reciproca-

tive movement between top dead center and bottom dead center positions and cooperating with said cylinder to form a combustion chamber, and an exhaust port in said engine block for exhausting gases from said combustion chamber, said piston closing said exhaust port during movement from the bottom dead center position toward the top dead center position, a spark plug mounted on said engine block and having electrodes communicating with said combustion chamber, an electrical ignition circuit for supplying ignition current to said spark plug, a switch connected in said ignition circuit and movable between an engine operating position to permit flow of ignition current to said spark plug and an engine shutoff position to interrupt flow of ignition current to said spark plug, and means for reducing the coast-down time of said engine



including means defining a flow passage having a discharge port and an inlet port opening into said combustion chamber, the ratio of the volume swept by said piston (cubic inches), during movement from closure of said exhaust port to the top dead center position, to the minimum cross sectional flow area of said flow passage (square inches) being about 320 to about 480 inches, a valve disposed in said flow passage for movement between a closed position to prevent flow through said flow passage and an open position to permit flow through said flow passage, and means connecting said switch to said valve for moving said valve to the open position in response to movement of said switch from the engine operating position to the engine shutoff position and for moving said valve to the closed position in response to movement of said switch from the engine shutoff position to the engine operating position.

4,194,486

IGNITION MEANS FOR ROTARY PISTON ENGINES

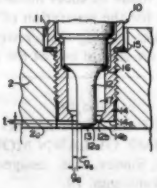
Haruhiko Satow; Tadakazu Ueda, both of Hiroshima, and Ikuo Ogasawara, Nagoya, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, and NGK Spark Plug Co., Ltd., Nagoya, both of Japan

Filed Feb. 14, 1978, Ser. No. 877,732

Claims priority, application Japan, Feb. 15, 1977, 52/17825[U]; Feb. 15, 1977, 52/17826[U]

Int. Cl.[2] F02B *53/12*

U.S. Cl. 123—210 **3 Claims**



1. Rotary piston engine comprising a casing which includes a rotor housing having opposite sides and an inner wall surface of trochoidal configuration and a pair of side housings secured to the opposite sides of the rotor housing and having inner wall surfaces which define a rotor cavity together with the inner wall surface of the rotor housing, a substantially polygonal rotor disposed in said rotor cavity for rotation with apex portions in sliding contact with the trochoidal inner wall surface of the rotor housing, ignition means including bore means formed in the inner wall surface of the casing and ignition plug means disposed in said bore means, said ignition plug means being of surface gap and air gap discharge type having a discharge end constituted by inner and outer electrodes spaced apart from each other through a surface gap discharge distance defined by a surface of an insulative sleeve encircling the inner electrode and an air gap discharge distance defined between the insulative sleeve and the outer electrode, said surface gap discharge distance being not less than 0.6 mm and not greater than 1.3 mm, said air gap discharge distance being not less than 0.7 mm and not greater than 1.4 mm, said surface gap discharge distance being not greater than said air gap discharge distance, the outer electrode having a tip end axially retreated with respect to the surface of the insulative sleeve by a distance between 0.3–1.0 mm, and said ignition plug means being located with the discharge end disposed in proximity to the inner wall surface of the casing.

4,194,487

DOWNDRAFT WOODBURNING STOVE

John Y. Cadwallader, Sycamoore La., West Arlington, Vt. 05250, and Edward J. Frasier, 307 Elm St., Bennington, Vt. 05201

Filed Aug. 2, 1976, Ser. No. 711,065

Int. Cl.[2] F24B *7/04*

U.S. Cl. 126—61 **4 Claims**

1. A downdraft stove comprising a stove body within which are one or more slanting grates with means for supporting same in said body and also within which are internal members of one or more walls extending upwards from a point above the lowest point of said slanting grates so as to form a space between said members and grates with at least one air inlet nozzle below said grates, one or more air inlet nozzles above said grates and longitudinal elements above said nozzles to provide a clear passageway for combustion air whereby progressively burning coals descend to said space and whereby all smoke, air and gases pass through said space insuring their complete ignition.

4,194,488

HOME HEATING SYSTEM

Leslie Bellaff, River Edge, N.J., assignor to William W. Weaver, Va.

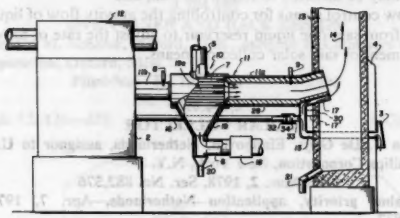
Filed Sep. 27, 1978, Ser. No. 946,188

Int. Cl.[2] F24H *3/00*; F24B *7/00*

U.S. Cl. 126—112 **10 Claims**

1. In a house heating system having a furnace with a combustion chamber for burning fuel and creating heat, a chimney with a draft therein, an improvement comprising: an exhaust flue connected between the combustion chamber and the chimney for venting heated exhaust products from the furnace; a heat reclaimer connected into said exhaust flue between the combustion chamber and the chimney for reclaiming heat from the heated exhaust product; a first uninsulated flue portion of said exhaust flue connected between the combustion chamber and said heat reclaimer; a second insulated flue portion of said

exhaust flue connected between said heat reclaimer and the chimney; a combustion air line connected to the combustion chamber; an outside air line connected between the outside of the house and said combustion air line to supply outside air to the combustion chamber; an outside air return line connected between the junction of said combustion air and outside air line, and the chimney; and a flow sensing and regulating means associated with said combustion air and balancing air lines for providing a flow of outside air to the combustion chamber when fuel is burned therein and for providing a flow of air in



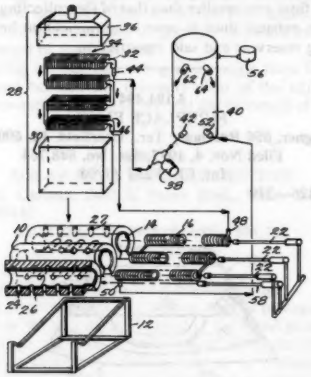
said balancing air line with substantially no air flow in said combustion air line when fuel is not burned within the combustion chamber; said heat reclaimer comprising a housing, an exhaust passage through said housing for the passage of exhaust from said exhaust flue, a cool medium passage in said housing, a cool medium inlet line connected to said housing for inletting cool medium from the house, a warm medium outlet line connected to said housing for warm medium coming from said heat reclaimer, and a liquid drain at the bottom of said housing communicating with said exhaust passage for draining condensed liquids from the exhaust passage.

4,194,489

COMBINATIONAL FIREPLACE UNIT

Samuel J. Swain, 824 Dixie St., Carrollton, Ga. 30117

Continuation-in-part of Ser. No. 635,422, Nov. 26, 1975, Pat. No. 4,061,133. This application Nov. 16, 1977, Ser. No. 852,083
The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.
Int. Cl.[2] F24D *3/08*
U.S. Cl. 126—127 **17 Claims**



1. A combinational fireplace, fluid heating system comprising:

a plurality of log-shaped members having means defining a hollowed center portion and having means for transferring air from below said members to said center portion thereof, at least one of said members having aperture means extending from said center portion to the outside of said member proximate the top thereof;

means for connecting said center portions of adjacent members;

means for supporting said plurality of members;

spiral shaped tubing extending within said hollowed center portion and substantially throughout the length of said plurality of members, for conducting fluid;

first fuel burning means extending along the longitudinal axis defined by said spiral tubing within said plurality of membeers, for heating said fluid passing through said spiral tubing; and

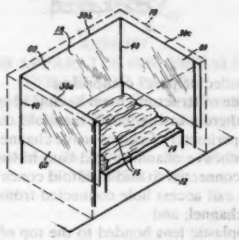
means for preheating said fluid using the exhausted energy from said first burning means.

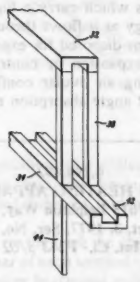
4,194,490

FIREPLACE THERMAL REFLECTOR APPARATUS

James J. Crnkovic, 70 Elmwood Ave., Glenolden, Pa. 19036

Filed Aug. 8, 1977, Ser. No. 822,902
Int. Cl.[2] F24B *1/18*; F24C *15/22*
U.S. Cl. 126—141 **2 Claims**





1. A free standing fireplace reflector apparatus for reflecting radiant heat energy into the room in which the fireplace is located, comprising:

a rear frame, including a pair of legs, receiving a first reflector panel; and

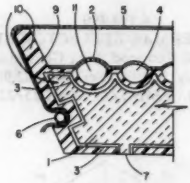
a pair of side frames, pivotally connected to said rear frame so that the apparatus may be adjusted to fit into fireplaces having different side angles, each of said side frames having a leg connected thereto at the end opposite from said pivot; said frames receiving respectively a second and third reflector panel; each of said side frames and said rear frame including:

an upper horizontal grooved member and a lower horizontal grooved member receiving and slidably engaging one of said panels in said grooves; and

a pair of vertical members connected to their respective upper and lower grooved members at the opposite ends thereof, wherein each of said pairs of vertical members

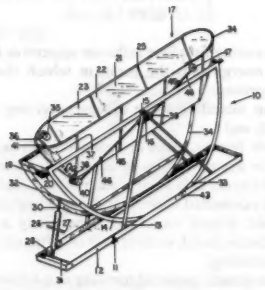
includes one vertical member having a groove therein receiving an end of a reflector panel when said panel is positioned in said frame and one vertical member having a slot therein permitting said panel to pass therethrough so that said panel is properly positioned to slide between the upper and lower grooved members into the vertical grooved member in each of said frames.

4,194,491
SOLAR COLLECTOR PANEL
Eugene J. Randall, 603 Chambers Dr., Huntsville, Ala. 35801
Filed May 17, 1977, Ser. No. 797,668
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—417 **13 Claims**



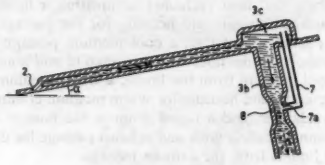
1. A solar collector panel comprising:
a. a base made of structural foam having a top with concave channels therein and having a manifold concave channel along the perimeter of said concave channels and connecting said concave channels, said base having an entry access hole connected to said manifold concave channel and having an exit access hole connected from said manifold, concave channel; and
b. A thermoplastic lens bonded to the top of the base adjacent on each side of said channels and spanning the concave channels of the base, whereby the channels form transfer passages which carry a liquid media which absorbs solar energy as it flows through the passages, said thermoplastic lens disposed for expansion or contraction in response to expansion or contraction of said liquid media and having an ovular configuration which will enhance incident angle absorption responsive to said expansion.

4,194,492
SOLAR HEATING APPARATUS
Gerald J. Tremblay, 7015 Leighton Way, Orlando, Fla. 32807
Filed Oct. 3, 1977, Ser. No. 838,666
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—425 **14 Claims**



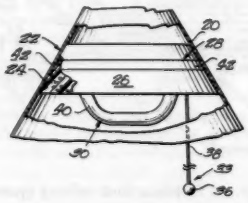
1. A solar fluid heater comprising in combination:
a frame having a base and a movable portion;
solar collector means for collecting and concentrating solar energy, said solar collector means being movably attached to said frame;
inclination adjustment means for adjusting said solar collector means for different inclinations of the earth relative to the sun, said inclination adjustment means being attached between said frame base and said movable portion;
solar tracking means for moving said solar collector means on said frame during daylight hours responsive to the displacement of a liquid from one reservoir mounted on said collector means whereby said solar collector means may be directed to follow the sun; and
flow control means for controlling the gravity flow of liquid from said one liquid reservoir to adjust the rate of movement of said solar collector means.

4,194,493
SOLAR COLLECTOR
Johan C. De Grijs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 2, 1978, Ser. No. 882,576
Claims priority, application Netherlands, Apr. 7, 1977, 7703837
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—442 **3 Claims**



1. A solar collector comprising a heat exchanger which has a duct for transferring heat obtained from incident solar radiation during operation to a liquid heat transport medium conducted through the duct and containing a gas, the solar collector being arranged during operation at an angle relative to the horizontal, said liquid heat transport medium duct thereby including an upper portion constituting a collecting reservoir for gas released from the liquid heat transport medium, a constriction formed in the liquid heat transport medium duct downstream from the collecting reservoir and having a cross-sectional flow area smaller than that of the collecting reservoir, and a gas exhaust duct in open communication between the collecting reservoir and said constriction.

4,194,494
FIREPLACE PLUG
Cyril Wagner, 856 Rosemary Ter., Deerfield, Ill. 60015
Filed Nov. 4, 1977, Ser. No. 848,764
Int. Cl.[2] F23J *13/08*
U.S. Cl. 126—319 **4 Claims**



1. A fireplace plug for closing the metallic throat of a fireplace during periods of nonuse comprising:

a plug shape foam body having a wall complementary to the shape of the fireplace throat for mating with said throat;

a substantially continuous magnetic strip extending along said wall for magnetic attraction to the metallic throat and for securing the wall to the throat;

a handle depending from the underside of said body; and

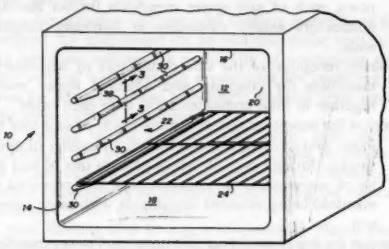
a depending indicator means hanging downwardly from the body for indicating that the fireplace plug has closed the throat of the fireplace.

4,194,495

OVEN LINER AND RACK DESIGN

Richard M. Scherer, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.

Filed Nov. 11, 1977, Ser. No. 850,652
Int. Cl.[2] F24C *15/16*
U.S. Cl. 126—339 **3 Claims**



1. For use in an oven liner of the type having canted ribs formed in the side walls thereof, the ribs being formed by relatively shallow smoothly converging upper and lower canted surfaces, an improved oven rack dimensioned to be slidably supported on the upper surface of the ribs and stabilized thereon comprising:

a mesh defined by rigidly connected substantially coplanar structural members having two substantially parallel sides;

guiding means for slidably guiding said rack into and out of the oven cavity, said means disposed substantially perpendicular to the mesh along two parallel sides thereof and including;

a supporting surface extending at an angle to the mesh for supporting the rack on the upper surface of the ribs;

a stabilizing surface disposed substantially perpendicular to the mesh, normally clear of the ribs but capable of abutting with adjacent ribs to prevent excessive lateral displacement of the rack; and

an arresting surface depending at an angle from the mesh, disposed beneath and normally clear of the adjacent rib for preventing excessive vertical displacement of the rack.

4,194,496

SOLAR HEAT STORAGE SYSTEMS

Norman G. Carlson, 2431 S. Shore Blvd., White Bear Lake, Minn. 55110

Filed Mar. 30, 1978, Ser. No. 891,732
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—430 **7 Claims**

1. The method of storing solar heat including:

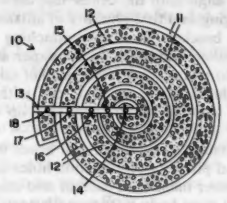
forming a solar storage unit having a spiral passage containing heat storage means located in the spiral passage;

forming air ducts at radially spaced distances along said spiral passage and supplying heated air through at least one of said air ducts to said heat storage means removing the air through another of said air ducts in said spiral passage.

2. A solar storage unit comprising:

a top member, and a bottom member having a central portion and an outer portion;

a wall connecting said top member to said bottom member, said wall having one end located in the central portion between said top member and said bottom member, said wall spiraling outward to thereby produce a spiral passage from said central portion to said outer portion, heat storage means located in said spiral passage;



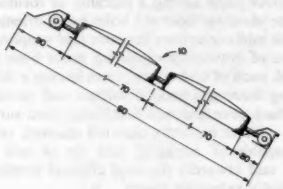
a set of air ducts radially spaced from the central portion of said solar storage unit to said outer portion of said storage unit to thereby provide air passages to said spiral chamber intermediate the central portion and the outer portion of said solar storage unit.

4,194,497

METHOD AND APPARATUS FOR INSTALLING SOLAR COLLECTOR PANELS

Eben J. Gramer, 5441 E. Nassau Cir., Englewood, Colo. 80110, and William E. Kugler, 2989 S. Detroit Way, Denver, Colo. 80210

Filed May 24, 1978, Ser. No. 908,962
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—432 **9 Claims**



1. A method for installing solar collector panels as part of the roof of a building, said roof having vertical roof joists spaced at predetermined distances, said method comprising the steps of:

scribing chalk lines on the roof, the chalk lines being located to define the center of each vertical roof joist and to define the upper and lower horizontal ends of the panels,

affixing a lower support bracket aligned along the lower chalk line through the roof to the joists,

affixing an upper support bracket aligned along the upper chalk line through the roof to the joists,

affixing a center rail between the upper and lower support brackets along each vertical chalk line through the roof to the joists, and

installing a plurality of collector panels between the vertical rails, the collector panels engaging the upper and lower support brackets.

7. An apparatus for installing solar collector panels as part of the roofing material on the roof of a building, said roof being formed from tar paper covered plywood over support joists spaced at predetermined distances, said apparatus comprising:

upper and lower angle mounting brackets, each of said brackets having first and second edges, each of said brackets further having an outwardly extending lip along said first edge with a first plurality of affixation holes formed along a line near said second edge of said bracket, the aforesaid affixation holes being spaced to align with the

center of said support joists of said building and with a second plurality of affixation holes formed along said line, the aforesaid holes being spaced to align with the center-line between said joists, said first edge of said upper bracket having a plurality of insertion holes formed in a line near said tip, said plurality of insertion holes being spaced to align with the center line between said joists,

means engaging said first plurality of affixation holes of said mounting brackets for firmly attaching said upper and lower brackets through said tar paper and through said plywood to said support joists, each of said brackets being mounted horizontally on said roof with said first edge extending upwardly and with said lip oriented downwardly,

means for attaching said upper and lower brackets through said second plurality of affixation holes to said plywood,

upper and lower manifolds, each of said manifolds having a cylindrical main body portion with ports extending from opposing ends of said main body and with one or a plurality of outwardly extending ports disposed along a longitudinal line extending the length of said main body, the aforesaid ports of said upper manifold being oriented to engage through said insertion holes when said upper manifold is placed on said upper bracket, said ports of said lower manifold being oriented to align over said second plurality of affixation holes when said lower manifold is placed on said lower bracket,

upper and lower manifold cover plates for mounting over said manifolds and said brackets, each of said cover plates having a first surface parallel with said roof containing a first plurality of affixation holes, the aforesaid affixation holes being spaced to align with the center of said support joists, and a second plurality of affixation holes oriented on the center lines between said joists, each of said cover plates further having a second surface angularly extending upwardly over said manifolds, the second surface of said lower cover plate having a plurality of formed insertion holes, the aforesaid insertion holes being oriented to coincide with said centerlines between said support joists and receptive of outwardly extending ports from said lower manifold, each of said cover plates having a third surface extending from said second surface and parallel to said first surface over said manifolds, said third surface being integral with an inwardly directed channel, said channel being capable of engaging said lip of said mounting bracket, said inwardly directed channel terminating in a downwardly extending flange,

means engaging said first plurality of affixation holes of said cover plates for firmly attaching said upper and lower plates through said tar paper and said plywood to said support joists, each of said cover plates being mounted over said manifolds with said channels engaging said lips of said mounting brackets,

means engaging said second plurality of affixation holes of said cover plates for attaching said upper and lower plates through said tar paper to said roof,

a plurality of vertical rails, each of said vertical rails being mounted through the roof and to the joists between the upper and lower mounting brackets on said roof,

means for coupling one or a plurality of said panels to said upper and lower manifolds between said vertical rails, and

means for connecting said ports on the opposing ends to adjacent manifolds in fluid communication.

8. A modular manifold system for interconnecting a plurality of solar collector panels together in fluid communication with a fluid source on the roof of a building, said roof being supported by roof joists spaced at a predetermined distance, each of said solar collector panels having upper and lower fluid ports and means for interconnecting a plurality of said solar collector panels together in a plurality vertical rows, each of said rows containing a number of stacked solar collector panels, said manifold system comprising:

a plurality of lower manifolds, each of said lower manifolds having a plurality of connectors spaced at said predetermined distance from each other, each of said connectors being capable of engaging in fluid communication the lowermost solar collector panel in each of said rows, each of said lower manifolds further having side connectors axially extending at opposing longitudinal ends,

means receptive of the side connectors of adjacent lower manifolds for coupling adjacent lower manifolds together in fluid communication with each other,

means for mounting said lower manifolds on said roof to said joists said mounting means including a cover plate with a plurality of openings therein, through each of which extends one of said plurality of connectors, the connectors of said mounted lower manifold being oriented to coincide with the centerlines between said joists,

a plurality of upper manifolds, each of said upper manifolds having a plurality of connectors spaced at a predetermined distance from each other, each of the aforesaid connectors being capable of engaging in fluid communication the uppermost solar collector panel in each of said rows, each of said upper manifolds further having side connectors axially extending at opposing longitudinal ends,

means receptive of the side connectors of adjacent upper manifolds for coupling said adjacent upper manifolds together in fluid communication with each other,

means for mounting said upper manifolds on said roof to said joists, said mounting means having a plurality of openings therein through each of which extends one of said plurality of connectors, the connectors of said mounted upper manifold being oriented to coincide with said centerlines, and

means for interconnecting said upper and lower manifolds in fluid communication with said fluid source.

4,194,498

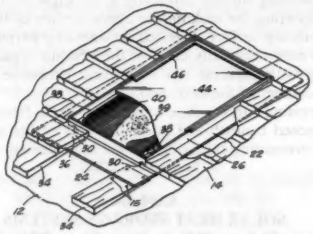
SOLAR COLLECTOR CELL AND ROOF FLASHING ASSEMBLY AND METHOD OF CONSTRUCTING A ROOF WITH SUCH AN ASSEMBLY

Myron D. Mayerovitch, Yorba Linda, Calif., assignor to Frank Mayer, Yorba Linda, Calif.

Filed Jul. 13, 1978, Ser. No. 924,135

Int. Cl.[2] **F24J** *3/02*

U.S. Cl. 126—450 **4 Claims**



1. A method for constructing an inclined shake roof that incorporates a solar collector structure and may be functionally deployed at the time of roof construction and also may be camouflaged for later functional deployment with a minimum of roof modification; the method comprising the steps of:

a. installing an improved solar collector cell container and roof flashing assembly of the type having a plurality of contiguous substantially vertical walls forming a container for receiving an apparatus for heating a liquid by sunlight incident upon such a roof; and having the improvement comprising:

a roof flashing having a substantially planar base portion underlying said vertical walls and extending perpendicular to and beyond said walls external to said container

to form a substantially contiguous flange along the external perimeter of said container;

said roof flashing also having a substantially planar ramp portion integral with said flange along at least a portion thereof and extending from said flange at an obtuse angle with respect to said base portion, a substantially straight crease line being formed along the junction between said ramp portion and the flange portion from which it extends;

said roof flashing being adapted to receive a plurality of roof shakes overlying and substantially covering said ramp portion and said flange to be secured thereto whereby said roof flashing may be hidden from view and said ramp may be bent down toward and in forced engagement with said roof;

b. filling the container of said assembly with a temporary filler material that substantially occupies the entire enclosed volumne of said container; and

c. installing roof shakes on said flashing base, and on said filler material.

3. In a solar collector cell and roof flashing assembly of the type adapted for installation on an inclined shake roof of a building structure and having a plurality of contiguous substantially vertical walls forming a container for receiving an apparatus for heating a liquid by sunlight incident upon such a roof, the improvement comprising:

a roof flashing having a substantially planar base portion underlying said vertical walls and extending perpendicular to and beyond said walls external to said container to form a substantially continuous flange along the external perimeter of said container;

said roof flashing also having a substantially planar ramp portion integral with said flange along at least a portion thereof and extending from said flange at an obtuse angle with respect to said base portion, a substantially straight crease line being formed along the junction between said ramp portion and the flange portion from which it extends;

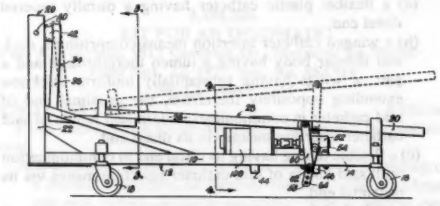
said roof flashing being adapted to receive a plurality of roof shakes overlying and substantially covering said ramp portion and said flange for being secured thereto on such a roof, whereby said roof flashing may be hidden from view and said ramp may be bent down toward, and in forced engagement with, said roof.

4,194,499

BED FOR STIMULATING CIRCULATION

Thomas L. Donnelly, Jr., 2304 Norwood, Independence, Mo. 64052

Filed Mar. 5, 1979, Ser. No. 17,125
Int. Cl.[2] A61H *1/00*
U.S. Cl. 128—24 R **12 Claims**



1. Therapeutic apparatus for treatment of patients requiring stimulation of blood circulation, said apparatus including:

an elongated, normally horizontal frame adapted to support bedding upon which the patient lies during treatment, with the patient's head at one end of the frame;

means at said end pivotally supporting the frame for swinging movement about a horizontal axis disposed transversely of the frame at an elevation substantially the same as that of said head of the patient on the bedding; and

power means coupled with the frame remote from said end for swinging the frame about said axis to a first, longitudinally inclined position sloping upwardly toward the opposite end of the frame or to a second, longitudinally inclined position sloping downwardly toward said opposite end.

4,194,500

GRAVITY ORTHOPEDIC DEVICE

Anthony J. Grimaldi, 2901 S. Bayshore Dr., Apt. 16, Miami, Fla. 33133

Filed Jul. 15, 1977, Ser. No. 816,010
Int. Cl.[2] A61H *1/02*
U.S. Cl. 128—75 **18 Claims**

1. A gravity orthopedic device comprising,

a board sized to accommodate persons with a relatively wide range of heights, the board providing a support surface for an orthopedic patient having a top end, opposed side edges and a bottom end for engagement against a bottom support surface such as a floor,

a bracket assembly for attachment to an already existing permanent type support structure, such as a wall, at a predetermined height above the bottom support surface, the bracket assembly includes a vertically adjustable transverse rod having opposed end portions and means for selectively supporting said transverse rod within a range of predetermined height above the bottom support surface,

the means to selectively support comprises a pair of spaced apart vertical, parallel slide rods, a collar for sliding engagement on each of said slide rods, attachment means connecting said opposed ends to the respective collars and set screw means in each of said collars to provide for fixed engagement with the respective slide rods,

the means to selectively support includes top and bottom transverse plates connecting between respective top and bottom ends of said vertical slide rods,

means for engaging the mid-section of the patient's body, and

connecting means between said means to engage and said top end in a manner so as to suspend the patient's body along said patient's support surface above the bottom support surface.

4,194,501

FIRST AID SPLINT FOR CERVICAL SPINE INJURIES

Russell A. Watt, 6393 Jadeite Ave., Alta Loma, Calif. 91701

Filed Jul. 31, 1978, Ser. No. 929,388
Int. Cl.[2] A61H *1/02*
U.S. Cl. 128—75 **6 Claims**

1. A device for immobilizing the head and cervical spine of an injury victim which comprises:

a body harness having first and second half sections, means for releasibly connecting said half sections together,

said body harness being adopted to embrace the thoracic region, the shoulders, the sides and the back of a victim,

a head cage comprising a first and second pair of elongated rigid members and first and second U shaped members,

said first pair being mounted on said first half section in spaced relationship such that said first pair of rigid members projects substantially upward around the head of a victim when said harness is worn by a victim,

said second pair being mounted on said second half section in spaced relation such that said second pair of rigid members project substantially upward around the head of a victim when said harness is worn by a victim,

said first U shaped member being mounted horizontally on said first pair of rigid members,

said second U shaped member being mounted horizontally on said second pair of rigid members,

said U shaped members being sized and positioned such that they extend completely around the head of a victim when said harness is worn by a victim,

means for releasibly connecting the ends of the U shaped members together,

said head cage further comprising an inflatable air pillow shaped like an open toroid insertable within said first and second pair of rigid members such that when said harness is worn said pillow is positioned between said rigid members and the neck of a victim and when inflated said pillow immobilizes the head of a victim within the confines of said rigid members by encircling the neck of a victim.

4,194,502

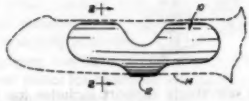
EXTERNALLY APPLIED SUPPORT FOR A PENIS

John F. Eckels, 981 Deltona Blvd., Deltona, Fla. 32725

Filed Mar. 27, 1979, Ser. No. 24,310

Int. Cl.[2] A61F *5/00*

U.S. Cl. 128—79 **15 Claims**



1. An externally applied support for a penis comprising:

a. a curved base formed as a section of a resilient tubular member having a first radius equal to the radius of said penis, said base having first and second sides;

b. a resilient first side member coupled to the first side of said base, formed as a second section of said tubular member and having first and second laterally symmetrical brace elements helically sweeping above and away from said base and adapted to partially support and encircle a first side of said penis; and

c. a resilient second side member coupled to the second side of said base, formed as a third section of said tubular member and having first and second laterally symmetrical brace elements helically sweeping above and away from said base and adapted to partially encircle and support a second side of said penis, the second side of said penis being diammetrically opposed to the first side.

4,194,503

INTRA-UTERINE CONTRACEPTIVE DEVICE

Laszlo K. Csatary, 1913 Windsor Rd., Alexandria, Va. 22307

Filed Nov. 28, 1977, Ser. No. 855,414

Int. Cl.[2] A61F *5/46*

U.S. Cl. 128—130 **6 Claims**

1. An intra-uterine contraceptive device comprising an inner base ring made from a resilient material and formed into a generally circular shape having a free end formed into a bul-

bous shape, and a jelly-like material formed on said inner ring into a plurality of bead-like protrusions over the length of said inner ring.

4,194,504

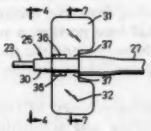
WINGED CATHETER PLACEMENT ASSEMBLY

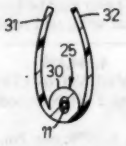
Jack L. Harms, Mundelein, and Charles H. Seberg, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 12, 1978, Ser. No. 950,941

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214.4 **8 Claims**





1. In an intravenous catheter assembly including

(1) a catheter unit comprising:

(a) a flexible plastic catheter having a distally tapered distal end,

(b) a winged catheter insertion means comprising a resilient tubular body having a lumen therethrough and a pair of wings having substantially uniform thickness extending oppositely therefrom, the proximal end of said catheter in communication with said lumen of said catheter insertion means via its distal end,

(c) a flexible tubing having its distal end in communication with said lumen of said catheter insertion means via its proximal end,

(d) a tube hub having a lumen therethrough, the proximal end of said flexible tubing in communication with said lumen of said tube hub via its distal end, and

(2) a needle inserted through said catheter, winged catheter insertion means, flexible tubing and tube hub, said needle having a sharpened distal end extending beyond said distal end of said catheter and a proximal end attached to a needle hub; the improvement which comprises:

an area of reduced thickness on each of said wings along a portion of the width thereof substantially adjacent to said tubular body and providing improved flexibility to said

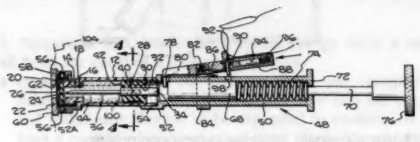
wings, the remainder of said wing width portion providing an unreduced thickness portion, said lumen of said winged catheter insertion means having a diameter opposite the unreduced portions of said wings adjacent said tubular body predetermined to only capture said needle within said tubular body by the distortion of said lumen of said winged catheter insertions means when said wings are simultaneously held in a substantially vertical position.

4,194,505

CONTAINERIZED HYPODERMIC MODULE

William L. Schmitz, Hemet, Calif., assignor to Vac-O-Cast, Inc., Hemt, Calif.

Filed Sep. 15, 1978, Ser. No. 942,533
Int. Cl.[2] A61M *5/20*
U.S. Cl. 128—218 D **21 Claims**



1. A self-contained hypodermic syringe dosage module for insertion into an injector comprising:

a cylindrical barrel having open forward and rearward ends,

the forward end of said barrel having a pierceable seal across it,

the rearward end portion of said barrel having a piston in sliding sealing relation to the interior wall thereof,

said barrel, between said seal and said piston, defining a medicament chamber,

said piston having a longitudinal bore therethrough,

a tissue piercing needle unit having a longitudinal lumen therein from the forward end and terminating short of the rear end thereof, said needle unit having a liquid inlet port in flow communication with said lumen rearwardly of its forward end,

said needle shank portion being supported in the longitudinal bore of said piston with the inlet port of said shank portion located in and sealed by the wall of said bore,

said needle, forwardly of said shank portion, being freely supported in said medicament chamber by said piston,

said needle initially being movable longitudinally relative to said piston to pierce the seal at the forward end of said barrel and to expose said shank inlet port forwardly of said piston to permit flow of liquid medicament in said barrel into said port and said lumen.

4,194,506

KIT FOR AN OSTOMATE

Paul A. Voorhies, 1517 Gardenia Dr., Metairie, La. 70005

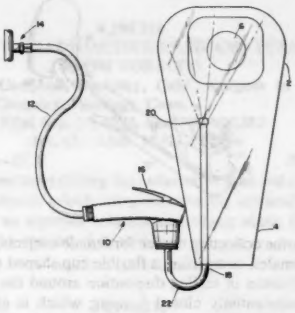
Filed Nov. 22, 1977, Ser. No. 853,919
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—283 **5 Claims**

1. An improved kit for an ostomate, comprising, in combination:

A. a drainable stoma bag appliance of the type consisting of a flexible, vertically elongated, member having a closed top end, which includes an orifice with a sealing ring means for sealing connection of said orifice about the stoma of the ostomate, and a bottom end, which is downwardly open and adapted for a closure means to close said open end; and

B. a directional water flushing appliance, comprising a hand-operated positive shut-off valve member which is connected, at an inlet end, to a means for supplying water pressure, and at an outlet end to a directional water outlet tube; wherein,

C. said water outlet tube consists of a rigid J-shaped tubular conduit, the short leg thereof ending at a proximate end which is attached to said valve outlet and the long leg thereof being substantially equal to the vertical distance between the top and bottom ends of said stoma bag appliance and ending at a distal end which includes at least one spray orifice adapted to issue a directional water spray



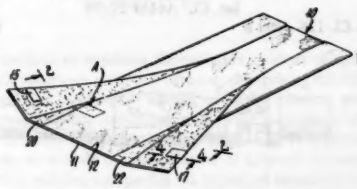
therefrom, in a direction substantially colinear to said long leg, whereby the ostomate is enabled to insert said long leg upwardly within the downwardly open end of said stoma bag appliance and manipulate a directional flushing action to selective portions of the interior of said stoma bag.

4,194,507

DISPOSABLE DIAPER INNER FACING

Irving S. Ness, Princeton Borough, and Michael R. Fechillas, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 663,323, Mar. 31, 1976, Pat. No. 4,085,754. This application Oct. 17, 1977, Ser. No. 842,759
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **6 Claims**

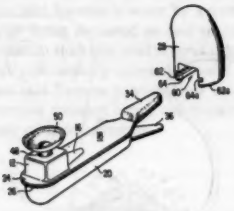


1. In a disposable diaper of the type having a fluid impervious outer facing, a fluid pervious inner facing, an absorbent core between said facings and adhesive tabs for fastening the diaper around the wearer thereof, an improved inner facing comprising a porous nonwoven fabric having at least one entire surface thereof being treated with a water insoluble adhesive release agent whereby that surface is capable of being a releasable surface for said adhesive tape tabs, said porous nonwoven fabric having a multiplicity of openings therethrough, which are sufficiently large to allow fluid to pass through after said fabric has been treated with a water insoluble adhesive release agent, causing said treated fabric to be pervious to fluid.

4,194,508
EXTERNAL FEMALE URINARY DRAINAGE DEVICE

Kenneth E. Anderson, P.O. Box 656, Moline, Ill. 61265

Filed Mar. 28, 1978, Ser. No. 891,095
Int. Cl.[2] A61F 5/44
U.S. Cl. 128—295 20 Claims

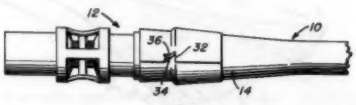


1. A urine collecting device for female subjects, as for incontinent females; comprising a flexible cup-shaped cap for external application in sealing disposition around the urethral orifice, a substantially closed housing which is elongate from forward to rearward ends to be disposed along the uro-genital and labial folds region preventing leakage of urine therealong, conduit means, means supporting said conduit means at the forward end of the housing and permitting movement relative thereto for comfortable fitting and adjustment, said conduit means being in liquid communication with the interior of said cap and the forward end of said housing for directing discharged urine into said housing; the cap, conduit means and housing being relatively small sized and shaped for enclosure of the cap and conduit means and at least partial enclosure of the housing for containment and support thereof by the labial folds in said region; and a discharge connection at the rearward end of the housing for discharge of collected urine therefrom.

4,194,509
PRECONNECTED CATHETER DRAINAGE SYSTEM

Keldon S. Pickering, Basking Ridge, and Keith T. Ferguson, Scotch Plains, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Apr. 11, 1978, Ser. No. 895,459
Int. Cl.[2] A61M 27/00
U.S. Cl. 128—350 R 8 Claims

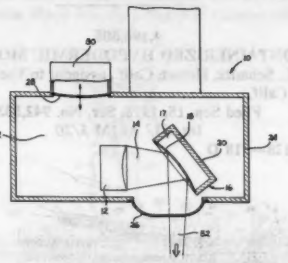


1. For use in a preconnected assembly for drainage and the like, a catheter, a drainage tube adaptor, said catheter having a proximal end, said adaptor being preconnected to said proximal end of said catheter, said drainage tube adaptor including a projecting end portion telescopically and frictionally received within the catheter through the proximal end of the catheter, a juncture defined between the proximal end of the catheter and the adaptor end portion, and means for maintaining the connection of said drainage tube adaptor to said catheter, said means comprises a heat shrinkable material encircling the juncture and extending about both the end portion of the adaptor and the proximal end of the catheter to each side of the juncture to both effect a sealing thereof and provide a visual indication of a disconnection effort.

4,194,510
ULTRASONIC FOCUSING SYSTEM

Andrew P. Proudian, Chatsworth, Calif., assignor to Second Foundation, Inc., Woodland Hills, Calif.

Filed Jun. 15, 1978, Ser. No. 915,783
Int. Cl.[2] A61B 10/00
U.S. Cl. 128—660 25 Claims

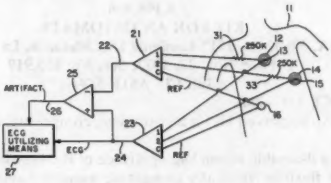


1. An ultrasonic focusing system comprising:
a housing substantially filled with a liquid media;
an ultrasonic transducer disposed within said housing for emitting ultrasonic waves and detecting echoes of said ultrasonic waves;
reflector means disposed within said housing so as to intercept and redirect said ultrasonic waves and said echoes, said reflector means comprised of a flexible acoustically reflective membrane; and
control means disposed within said housing and coupled to said reflector means via said liquid media, whereby said control means periodically deforms said reflective membrane such that said ultrasonic waves are reflected to converge at a point a preselected distance beyond said reflector means, and such that said echoes are reflected so as to be substantially in focus at said ultrasonic transducer substantially throughout the range of distances of interest over which the echoes are detected.

4,194,511
DETECTING CAPACITIVELY COUPLED ECG BASELINE SHIFT

Charles L. Feldman, Sudbury, Mass., assignor to Electronics for Medicine, Inc., Pleasantville, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,883
Int. Cl.[2] A61B 5/04
U.S. Cl. 128—696 10 Claims



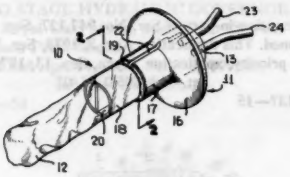
1. In apparatus for providing an ECG signal having first and second multielement electrode means each having elements closely spaced but insulatedly separated for connection to respective surface portions of a patient with the ECG potential between said elements being negligible, the improvement comprising,
resistive means in series with at least one of said elements of sufficiently high resistance to significantly unbalance capacitively coupled baseline shift artifact.

4,194,512

PROBE FOR NYSTAGMUS TESTING

Thomas M. Foti, 10937 Deborah Dr., Potomac, Md. 20854

Filed Jun. 8, 1977, Ser. No. 804,732
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—742 10 Claims



1. Apparatus for transferring thermal energy from a test fluid to an ear canal of a patient comprising:

a expansible receptacle for said test fluid, said receptacle being sufficiently small to be inserted into said ear canal and sufficiently flexible to be expanded to conform to at least a portion of said ear canal upon internal pressurization of said receptacle by said test fluid;

wherein said receptacle is made from plastic of membrane-like thickness to permit efficient transfer of thermal enery therethrough from test fluid in said receptacle;

an inlet passage for delivering test fluid under pressure into said receptacle;

an outlet passage for conducting test fluid under pressure out of said receptacle;

an ear mold secured to said receptacle, said ear mold having a forward section insertable into said ear canal, said mold adapted to be partially inserted into said ear canal with said forward section and said receptacle extending further into said ear canal, said receptacle attached to said forward section in sealing relationship and

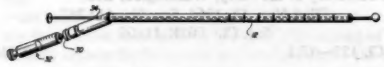
vent passage means defined in the forward section of said ear mold externally of said receptacle for exhausting air from around the exterior of said receptacle in the area of said forward section to ambient.

4,194,513

ANTENATAL CELL EXTRACTING DEVICE AND METHOD

Samuel A. Rhine, Concord, Mass.; Joseph F. Thompson, and Catherine G. Palmer, both of Indianapolis, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed May 5, 1977, Ser. No. 793,914
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—750 7 Claims



1. A sterile antenatal cell extracting device comprising:

flexible, plastic tube means having a proximal end and a distal end adapted for cervical insertion into a pregnant female;

flexible closure means comprising a flexible sleeve covering the proximal end of the tube means, with the plunger means passing through the sleeve;

plunger means provided within the lumen of the tube means and passing through the closure means at the proximal end of the tube means being movable with respect to the tube means;

valve means in association with the distal ends of the plunger means and of the tube means, movement of the plunger means with respect to the tube means causing the valve means to open and close the distal end of the tube means; and

means for causing fluid to flow selectively into and out of the tube means when the valve means is open,

whereby sterile antenatal cells may be extracted from the pregnant female.

4,194,514

REMOVAL OF RADIOACTIVE LEAD AND POLONIUM FROM TOBACCO

Ramsey G. Campbell, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 27, 1976, Ser. No. 726,388
Int. Cl.[2] A24B *15/02, 15/04*
U.S. Cl. 131—17 R 39 Claims

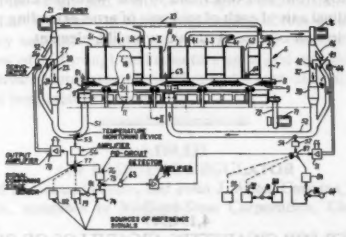
1. A process for reducing the radioactive lead and polonium content of tobacco which comprises treating uncured tobacco leaves with an aqueous solution containing about 0.01% to about 1.0% by weight of an acid.

4,194,515

METHOD AND APPARATUS FOR CONDITIONING BURLEY OR GREENLEAF TOBACCO

Gerhard Graalmann, Wohltorf; Reinhard Hohm, Pinneberg; Peter Schwarz, Rellingen, and Wilfried Muhsil, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Sep. 22, 1977, Ser. No. 835,489
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647438
Int. Cl.[2] A24B *3/10, 3/12*
U.S. Cl. 131—135 10 Claims

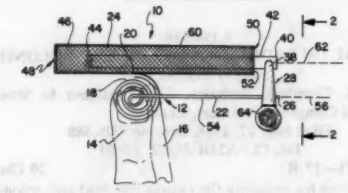


1. A method of reducing the moisture content of tobacco, especially burley or greenleaf tobacco, comprising the steps of transporting a continuous stream of moist tobacco along a predetermined path; subjecting successive increments of said stream to a first adjustable heating action in a first portion of said path; measuring the temperature of tobacco downstream of said first portion; comparing the measured temperature with a first reference value; adjusting said first heating action when the measured temperature deviates from said reference value; subjecting successive increments of said stream to a second adjustable heating action in a second portion of said path downstream of said first portion; measuring the temperature of tobacco downstream of said second portion; comparing the measured temperature of twice heated tobacco with a second reference value; adjusting said second heating action when the measured temperature of twice heated tobacco deviates from said second reference value; and adjusting said second heating action when the measured temperature of once heated tobacco deviates from said first reference value so as to intensify said second heating action when the measured temperature of once heated tobacco is less than that denoted by said first reference value and vice versa.

4,194,516
CIGARETTE HOLDER

Jerome Morgan, 149 S. 15th Ave., Maywood, Ill. 60153

Filed Oct. 20, 1977, Ser. No. 843,864
Int. Cl.[2] A24F *13/16*
U.S. Cl. 131—174 7 Claims



1. A cigarette holder comprising an elongated cylindrical tube of screening, one end of said tube having an open mouth portion, the other end of said tube having a circular cap of screening fixedly secured thereto, a wire-like element, one end of said wire-like element having a flat helical shape, said flat helical shape having a portion thereof fixedly secured to the exterior surface of said tube at a location intermediate the ends thereof, a portion of the length of said wire-like element adjacent the other end of said wire-like element extending parallel to the longitudinal axis of said tube and spaced parallelly and outwardly from the exterior surface of said tube, said portion of said wire-like element substantially residing in a plane defined by said flat helical shape, a pair of arms, each of said pair of arms pivotably secured to said other end of said wire-like element, means to bias one end of each of said arms toward one another, the other end of said each of said arms extending outwardly from said other end of said wire-like element, the longitudinal axis of each of said pair of arms extending perpendicular to said other end of said wire-like element.

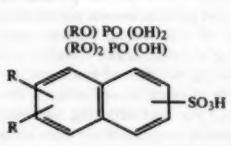
4,194,517
FILTER FOR CIGARETTES, CIGARILLOS OR PIPES

Horst Borowski, Hamburg, Fed. Rep. of Germany, assignor to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,559
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645036
Int. Cl.[2] A24B *15/02*
U.S. Cl. 131—261 R 17 Claims

1. An improved fibrous filter for removing harmful chemicals from tobacco smoke,

containing at least one compound selected from the group consisting of

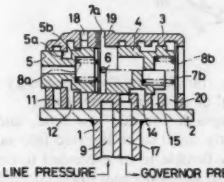


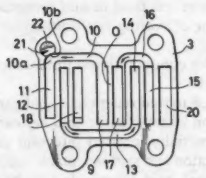
wherein R represents a straight-chain, branched, or cyclic aliphatic radical, said compound being insoluble in water and miscible with an organic solvent.

4,194,518
GOVERNOR HAVING ABILITY OF REMOVING DUST FROM WORKING FLUID IN AUTOMATIC TRANSMISSION

Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo; Kunio Ohtsuka, Yokohama, and Takahiro Yamamori, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Continuation-in-part of Ser. No. 947,127, Sep. 29, 1978, abandoned. This application Apr. 3, 1979, Ser. No. 26,580
Claims priority, application Japan, Sep. 13, 1978, 53-112644
Int. Cl.[2] G05D *13/08*
U.S. Cl. 137—15 6 Claims



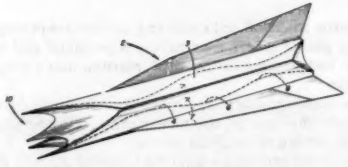


6. The method of removing dust contained in a working fluid circulating through a hydraulic control system of an automotive automatic transmission, comprising the step of using a governor by forming within a rotatable housing thereof a chamber which communicates with a fluid pressure passage for the working fluid so as to collect dust contained in the working fluid.

4,194,519
HYPERSONIC MODULAR INLET

Clifford B. Baker, and James L. Keirsey, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 18, 1964, Ser. No. 412,267
Int. Cl.[2] F02K *11/00*
U.S. Cl. 137—15.1 8 Claims



1. In an aerial vehicle, a hypersonic modular inlet comprising

an innerbody having a plurality of equally spaced inlet ducts extending longitudinally thereof, said inlets ducts having interior compression surfaces intersecting along the up-

stream end of said innerbody and forming hyperbolically curved leading edges between said inlet ducts, and

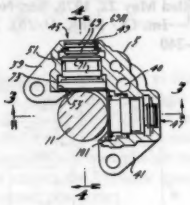
a cowling surrounding said innerbody and enclosing said inlet ducts.

4,194,520

TWO STAGE HYDRAULIC GOVERNOR

Uno Kuusik, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 24, 1978, Ser. No. 899,686
Int. Cl.[2] G05D *13/36*
U.S. Cl. 137—54 **2 Claims**



1. A speed hydraulic governor for controlling the pressure at which fluid is directed from a fluid pressure source to actuating elements of an automatic transmission having an output shaft, the governor comprising:

A. housing means adapted to be carried for rotation with said output shaft and radially removable therefrom;

B. a primary spool valve member having a plurality of speed lands and mounted for reciprocal movement within a primary bore formed in said housing means along a first axis normal to the axis of said output shaft, operative under the influence of centrifugal force during rotation of said shaft to direct fluid from said pressure source to said actuating elements at a governed pressure level varying directly with the rotational speed of said shaft, and including a fluid pressure responsive portion;

C. a secondary spool valve member having a plurality of spaced lands and mounted for reciprocal movement within a secondary bore formed in said housing along a second axis normal to said first axis and to the axis of said shaft and operative under the influence of centrifugal force during rotation of said shaft to direct fluid from said pressure source to said primary valve pressure responsive portion at a pressure level varying directly with the rotational speed of said shaft;

D. means for resiliently biasing said secondary valve member to a position wherein said directing of fluid is not effected until a predetermined rotational speed is attained; and

E. vent means formed on each of said primary and secondary spool valve members for effecting the venting of fluid radially outwardly from said output shaft under the influence of centrifugal force during a portion of said reciprocal movement.

4,194,521

FIRE PROTECTIVE STRUCTURE

Fred L. Banta, Edgewood, Ky., assignor to Burndy Corporation, Norwalk, Conn.

Filed Jul. 20, 1977, Ser. No. 817,402
Int. Cl.[2] E04B *1/94*; F16L *3/02*; H01B *7/34*
U.S. Cl. 137—67 **13 Claims**

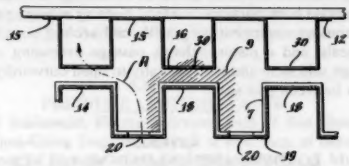
1. A ventilating structure for permitting free air circulation therethrough under ordinary ambient temperature conditions and for shielding objects on one side thereof from smoke, heat and flame originating on the opposite side thereof under extraordinary ambient temperature conditions, wherein:

said structure has an overall flat plate-like configuration characterized by an overall surface area significantly greater than the cross-section area thereof;

said structure comprising a pair of wall portions each defining a surface of said plate-like structure;

each of said wall portions having a plurality of closely spaced ventilating openings therethrough distributed substantially uniformly over the surface of said wall portions and dimensioned such that the total area of said openings is a significant portion of the overall area defined by each such wall portion, while the area of any one opening is substantially less than a significant portion of the overall area of such wall portion;

said wall portions being closely positioned in substantially parallel spaced-apart relationship so that the ventilating



openings in one of said wall portions are not in alignment with the ventilating openings in the other of said wall portions, for defining a space therebetween through which air may flow freely in through the ventilating openings in said one wall portion and out through the openings in the said other wall portion under ordinary ambient temperature conditions; and

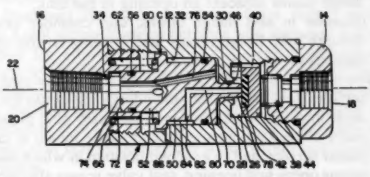
intumescent material positioned in the space between said wall portions distributed substantially uniformly throughout the length and width of said space and located so as to permit free flow of air through said structure under ordinary ambient temperature conditions, for obstructing the flow of air through said structure upon said material being activated into intumescent char under extraordinary ambient temperature conditions.

4,194,522

AIR PRESSURE REGULATOR

Richard L. Lucas, Owosso, and John J. Allen, Corunna, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 3, 1978, Ser. No. 893,194
Int. Cl.[2] F16K *31/12*; G05D *11/00*
U.S. Cl. 137—116.5 **2 Claims**



1. A pressure regulator comprising: a housing having inlet and outlet ports along a common axis, a first bore in said housing adjacent said inlet port, a second bore in said housing adjacent said outlet port, said second bore being stepped to define a large diameter second bore portion facing said first bore and a small diameter second bore portion facing said oulet port, a central housing passage connecting said bores and having a seat facing said first bore, a movable valve member in said first bore having flow passages therearound for flow of fluid therepast from said inlet port through said housing passage, first biasing means for normally biasing said valve mem-

ber toward said seat, a stepped piston positioned in said second bore and having a first piston end facing said housing passage and a second piston end facing said outlet port, piston passages through said piston between said first and second piston ends, a stem extending from said first piston end through said housing passage in radially-spaced relationship thereto, second biasing means for normally biasing said piston toward said inlet port for engaging said stem with said valve member and displacing said valve member away from said seat for flow of fluid from said inlet port to said outlet port around said valve member, through said housing passage and through said piston passages, said piston being responsive to a predetermined fluid pressure in said outlet port to move toward said outlet port for engaging said valve member with said seat to block fluid flow from said inlet port through said housing passage, axially-spaced seals between said piston and said large and small diameter second bore portions, a lateral housing exhaust passage in said housing communicating with said second bore between said seals, and a piston exhaust passage extending centrally through said stem and then laterally to open outwardly of said piston between said seals.

4,194,523

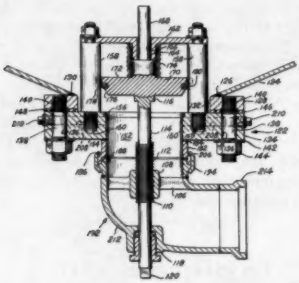
LOADING AND UNLOADING VALVES

Eugene Lubieniecki, Blue Island, Ill., assignor to North American Car Association, Chicago, Ill.

Filed Oct. 3, 1977, Ser. No. 838,639

Int. Cl.[2] F16K *1/02*

U.S. Cl. 137—238 **10 Claims**



1. A tank loading and unloading valve comprising:

flat flange means having a pair of substantially flat, planar surfaces on each side thereof,

mounting means for mounting one planar surface of said flange means adjacent an opening in the tank,

a chamber in said flange means, said chamber extending through said flange means and opening to the opposite surfaces of said flange means,

valve means removably mounted to said one of said planar surfaces, said valve means including plug means for movement into a first position in which said plug means normally closes said opening in said flange means at said one planar surface, and to a second position in which said plug means opens said opening, said valve means also including a valve stem extending from one side of said plug means and guide means for said plug means, said valve stem and guide means extending into the opening in the tank,

plate means for closing said opening at the other surface of said flange means when the tank is in transit,

adapter means comprising connector means for connecting a material handling conduit to said opening at said other surface and said chamber, said adapter means including biasing means operable from the side of said valve adjacent said other surface of said flange means for contacting said plug means on its side opposite said valve stem to bias said plug means to said second position when said adapter means is mounted adjacent said opening at said other surface in place of said plate means, and

mounting means for removably mounting said plate means when said valve is in transit and said adapter means in place of said plate means when the tank is to be loaded or unloaded adjacent the other surface of said flange means in covering relationship to said opening in said flange means at said other surface and said chamber.

4,194,524

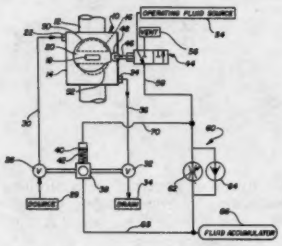
VALVE CHAMBER FLUSHING SYSTEM

Charles H. Wicke, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed May 22, 1978, Ser. No. 908,413

Int. Cl.[2] F16K *31/163, 51/00*

U.S. Cl. 137—240 **10 Claims**



1. A system to flush the valve body of a lading carrying valve in a lading handling network which must have the valve chamber thereof flushed when the valve is moved between open and closed positions, comprising:

an auxiliary inlet and outlet to said valve body through which a flushing fluid can pass through said valve body;

a pair of flush valves each in separate fluid communication with said auxiliary inlet and said auxiliary outlet, one of said flush valves being in fluid communication with a source of flush fluid and the other of the flush valves being in fluid communication with a suitable drain;

a valve actuator operably connected to said flush valves to open and close them; and

a flush valve control means operably connected to said lading carrying valve and in fluid communication with said valve actuator, said flush valve control means being actuated by said lading carrying valve upon movement of said lading carrying valve between said open and closed positions in order to sequence said valve actuator to open said flush valves in order to pass a flush fluid from said source through said valve chamber to said drain for flushing said valve chamber and to close said flush valves after a predetermined period of time to stop flow of said flush fluid through said valve chamber.

4,194,525

FLOAT ARM OPERATED VALVE

Edmund E. Struckman, 46 Charles Henwood Ave., Southridge, and Harold S. Larsen, 27b Northcliffe Ave., Westville, both of Durban, Natal, South Africa

Filed Mar. 6, 1978, Ser. No. 883,946

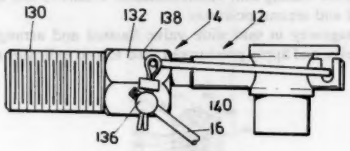
Claims priority, application South Africa, Oct. 5, 1977, 77/5972

Int. Cl.[2] F16K *31/18, 33/00*

U.S. Cl. 137—438 **2 Claims**

1. A liquid level control valve including a piston member formed with a passage between an inlet and an outlet and extending from a body provided with means for connecting the passage to a liquid supply; a cylinder member slidable over the piston member between a first and a second position, the cylinder member being formed with a transverse perforation

whereby liquid can flow along a flow path including the passage in the piston, the cylinder member and the perforation; means for obturating the flow path when the cylinder member is moved to the first position; a spindle journalled on the body for pivotal movement about a substantially horizontal axis; a lever arm transverse to and connected to the spindle at one end



and connectable to a float at its other end so that the spindle will rotate in response to movement of the float on a body of liquid the level of which is to be controlled; at least one radial projection on the spindle; and a linkage pivotally connected between the radial projection and the cylinder member so that movement of the float causes the cylinder member to move between its first and second positions.

4,194,526

NOZZLE REGULATING DEVICE

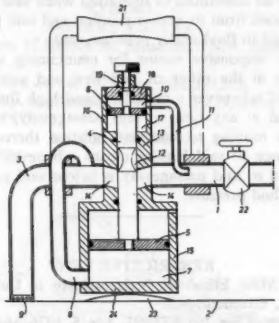
Thore Strömberg, Nordengatan 5, 602 36 Norrköping, Sweden

Filed Nov. 1, 1977, Ser. No. 847,693

Claims priority, application Sweden, Nov. 4, 1976, 76122670

Int. Cl.[2] G05D *9/04*

U.S. Cl. 137—498 **10 Claims**



1. A nozzle regulating device for automatically regulating the suction drawn by a suction hose at a nozzle having suction inlet means for drawing up fluid from a vessel, said nozzle regulating device comprising:

(a) a housing defining two cylinders with differently sized diameters and having openings located between said cylinders,

(b) said housing openings being interconnected to first and second pipe sections which connect to said suction inlet means and said suction hose, respectively,

(c) a valve stem encircled by a channel for interconnecting said housing openings and said stem being fitted to slide freely and be in sealing contact with a central bore in said housing,

(d) a servo piston disposed at each of the ends of said valve stem,

(e) one said piston having a considerably larger diameter than the other said piston,

(f) each said servo piston being fitted with a sliding seal in said cylinders which are co-axial with the valve stem,

(g) a first drive space located in the larger cylinder and on the side of the larger servo piston opposed to the valve stem,

(h) first pipe means for connecting the first drive space to said first pipe section which couples the suction inlet means to one of the housing openings,

(i) a second drive space located in the smaller cylinder and on the side of the smaller servo piston opposite the valve stem, and

(j) second pipe means for connecting the second drive space to said second pipe section which couples the suction hose to the other one of the housing openings,

(k) said servo piston being effective to cause the valve stem to slide within the housing bore and increase the opening area of the encircling channel within the housing openings in response to any change in pressure in the suction hose and first drive space on covering of the suction inlet means with said fluid in the vessel and reduce said opening area on clearing of fluid from said suction inlet means.

4,194,527

PRESSURE LIMITING VALVE

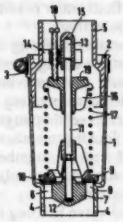
Siegfried Schönwald; Eberhard Breyer, both of Bad Neustadt, and Hans-Georg Trojahn, Saal, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1977, Ser. No. 852,592

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654077

Int. Cl.[2] F16K *15/06*

U.S. Cl. 137—543 **3 Claims**



1. A pressure limiting valve comprising a valve housing having therein a passage opening; a valve disk for closing said passage opening; a rod shaped guide member attached to said valve disk; first and second means each having a guide passage therein attached to the valve housing for guiding the respective ends of said rod shaped guide member; an abutment disposed about said rod shaped guide member between and spaced from said first and second means for sliding motion thereon; a coil spring disposed between said abutment and said valve disk for holding said valve disk against said passage opening; a setting screw engaging said abutment for adjusting the position of said abutment to determine the operating pressure of the pressure limiting valve; and means causing said guide member and said abutment to be tilted relative to each other such that said guide member slides within said abutment with friction.

4,194,528

SPHERICAL VALVE SEAL PISTON DETECTING AND LOCKING ARRANGEMENT

James L. Kepler, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 17, 1978, Ser. No. 897,188

Int. Cl.[2] F16K *43/00*

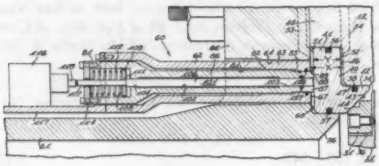
U.S. Cl. 137—554 **4 Claims**

1. A spherical valve including a housing having a fluid inlet and a fluid outlet, and provided with an annular groove surrounding said fluid inlet;

a rotor rotatably supported within said housing, said rotor having a fluid flow passage therein for selective alignment with the inlet and outlet of housing to permit fluid through the housing;

a first seal element on the rotor;

a second seal element movably carried by said housing within said annular groove and adapted to be selectively engaged with the first seal element on the rotor when the rotor is in a position wherein the fluid flow passage is not interconnecting the inlet and outlet of the housing, the engagement of said second seal element with said first seal element operating to block fluid flows, said second seal element being movably disposed within said annular groove and constructed and arranged to form a first fluid chamber on one side thereof, said first chamber when pressurized operating to move said second seal element out of sealing engagement with said first seal element, and a second fluid chamber on the opposite of said second seal element and operable when pressurized to effect movement of said second seal element into fluid sealing engagement with said first seal element;



means for supplying fluid under pressure to said first and said second chambers selectively;

a tubular locking member defining an axial bore movable into and out of positive engagement with said second seal element, said locking member when in engagement with said second seal element operating to positively lock said second seal element in sealing engagement with said first seal element; said locking member having an axial bore therethrough, said locking number having a pilot end portion and a threaded portion adjacent to and inwardly of the pilot end portion;

a threaded bore in said valve housing in communication with said second fluid chamber, said bore having a cylindrical guide portion adjacent the inner axial end of the said bore;

tool accepting means on the external end of said locking member to facilitate the manipulation of the said locking member into and out of locking engagement with said second seal element; and,

fluid sealing means operable between the cylindrical guide surface of said bore and the pilot end of said locking member.

4,194,529

CONTROL VALVE HAVING INTEGRAL VISUAL INDICATOR FOR FLUID SAFETY SYSTEMS

Melvin J. Hargraves, Lafayette, La., and Clifford M. Peters, Longview, Tex., assignors to W-K-M Wellhead Systems, Inc., Shreveport, La.

Continuation of Ser. No. 705,747, Jul. 15, 1976, Pat. No. 4,137,942. This application Sep. 21, 1978, Ser. No. 944,456

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.[2] F16K *37/00*

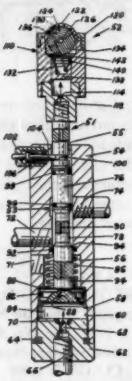
U.S. Cl. 137—557 **9 Claims**

1. In a control valve structure having a hollow housing, an elongate slide valve mounted in said housing for longitudinal movement therein, means urging the slide valve to a seated position thereof, manually accessible means on the slide valve located outwardly of the housing and adapted to be manually manipulated to displace the slide valve from its seated position, and port means in said housing for applying a sensed fluid pressure to said slide valve in a manner to maintain the slide valve displaced from its seated position when the sensed fluid pressure is sufficiently high to overcome said urging means, the improvement comprising:

visual indicator means mounted on said manually accessible means for movement between a first position to indicate a first operating condition and a second position to indicate a second operating condition;

means for biasing said visual indicator means to one of said first and second positions;

a passageway in said slide valve located and arranged to receive and apply pressurized fluid to said indicator means



under all conditions of operation when said slide valve is displaced from its seated position and said port means is exposed to fluid under pressure; and

pressure responsive means for maintaining said indicator means in the other of said first and second positions thereof whenever a predetermined high fluid pressure is applied at any time to said passageway, said indicator means moving to said one position thereof under the influence of said biasing means whenever the pressure applied to said passageway is below said predetermined high fluid pressure.

4,194,530

RESTRICTIVE VENT

Joseph V. Milo, Elizabeth, N.J., assignor to Universal Valve Co., Inc., Elizabeth, N.J.

Continuation of Ser. No. 673,991, Apr. 5, 1976, abandoned. This application May 30, 1978, Ser. No. 910,483

Int. Cl.[2] F16K *45/02*

U.S. Cl. 137—587 **6 Claims**

1. In a vent fitting for use in the vent line from a flammable liquid storage tank, which vent line defines a circular vapor path of uniform diameter to lead flammable vapors from the tank to atmosphere, the fitting comprising

a hollow, cylindrical body including a sidewall section which defines a first hollow, cylindrical channel;

the sidewall section being provided with an orifice, the orifice communicating with the hollow channel,

the cross sectional area of the orifice being less than the cross sectional area of the circular vapor path;

a vapor directing conduit angularly affixed to the sidewall section about the orifice,

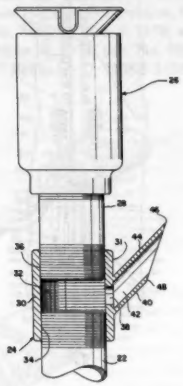
the conduit defining a second interior channel, the second interior channel communicating with the first hollow, cylindrical channel through the orifice,

the conduit being affixed to the sidewall section at an angle of more than zero degrees and less than ninety degrees,

the conduit terminating outwardly in an extended weather

shield designed to shield the second interior channel from the entrance of rain,

the weather shield comprising an upper outer end and a lower outer end, the upper end terminating outwardly further from the sidewall section than the lower outer end;



whereby at least part of the vapors within the vent line can travel to atmosphere through a path including the first cylindrical channel, the orifice and the second interior channel.

4,194,531

ROTARY VALVES

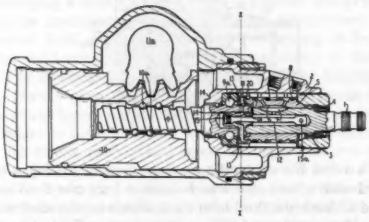
Arthur E. Bishop, 17 Burton St., Mosman, N.S.W. 2088, Australia

Filed Jul. 6, 1977, Ser. No. 813,272

Claims priority, application Australia, Jul. 9, 1976, PC6610; Oct. 26, 1976, PC7893

Int. Cl.[2] F15B *9/10*

U.S. Cl. 137—596 **8 Claims**



1. An improved rotary hydraulic valve to control the hydraulic assistance in power steering gears for automotive vehicles, comprising a valve input member, a coaxially arranged driven member, torsion bar means drivingly connecting said valve input member and said driven member, a first drive transmitting means for transmitting drive from said valve input member to said driven member arranged for limited lost motion between said valve input and driven members comprising a plurality of axially extending and projecting inter-engaging lug means alternately extending from said valve input and driven members, a valve sleeve member surrounding said valve input member, second drive transmitting means carried on a projecting portion of the lug means of said driven member arranged to provide a slack-free driving connection directly through the said portion of the lug means of said driven member between said valve sleeve member and said driven member.

4,194,532

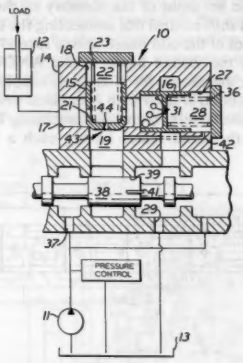
CONTROL VALVE WITH BYPASS MEANS

Lowell R. Hall, Elwood, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 10, 1978, Ser. No. 895,211

Int. Cl.[2] F15B *13/042*

U.S. Cl. 137—596 **2 Claims**



1. In a control valve for controlling fluid directed to and exhausted from a fluid jack, said control valve having a motor port connectable to the hydraulic jack, a passage, a check valve positioned between the passage and the motor port and being movable between a first position at which fluid is free to flow from the passage to the motor port and a second position at which reverse fluid flow from the motor port to the passage is substantially blocked, a drain port, a bypass valve positioned between the motor port and the drain port and being movable between a first position at which fluid flow between the motor port and the drain port is blocked and a second position at which the motor port is in communication with the drain port independent of said passage, a fluid chamber positioned at one end of the bypass valve, and an inlet port; the improvement comprising:

passage means for connecting the fluid chamber to the passage;

orifice means for restricting communication between the motor port and the passage at the second position of the check valve and developing a pressure drop between the motor port and the passage, and hence between the motor port and the fluid chamber in response to the passage being communicated with the drain port; and

a single valve positioned between the passage and both the inlet and drain ports and being movable between a first position at which the inlet port is in communication with the passage and a second position at which the passage is in communication with the drain port and the pressure drop between the motor port and the passage is precisely controlled by controllably modulating from the passage only the fluid entering the passage through the orifice means.

4,194,533

CONTROL CIRCUIT FOR PNEUMATIC SHIFT REGISTER

Daniel Bouteille, Marnes la Coquette; Andre Thomasse, Pacy-sur-Eure, and Eric Petrimaux, Evreux, all of France, assignors to La Telemecanique Electrique, Pacy-sur-Eure, France

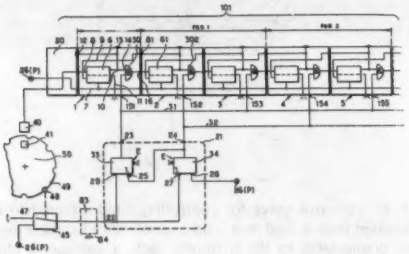
Filed Apr. 14, 1977, Ser. No. 787,662

Int. Cl.[2] F16K *37/00*

U.S. Cl. 137—624.18 **4 Claims**

1. A pneumatic shift register comprising: a plurality of cascade-mounted alternately odd and even phase cells, each comprising a bistable pneumatic memory having a set input

adapted to set said memory to a logic state 1 when a predetermined pressure is applied thereon, a reset input, an exhaust, a supply pressure input and an output, each phase cell further comprising a pneumatic AND-gate having first and second inputs and an output, the first input of the AND-gate being connected to the output of the memory, the output of each memory being connected to the reset input of the memory of the preceeding phase cell, the output of each AND-gate being connected to the set input of the memory of the succeeding phase cell; a first shift control line connecting the second inputs of the AND-gates of the odd phase cells; a second shift control line, connecting the second inputs of the AND-gates of the even phase cells; and means for alternately supplying said first and second shift control lines with pneumatic pressure pulses, said pressure pulse supplying means comprising first and second pneumatic threshold relays having each a fluid supply



input, a fluid control input and an output, the outputs of the first and second pneumatic threshold relays being respectively connected to the first and second shift control lines; a third pneumatic shift control line connected to the supply input of the first relay and to the control input of the second relay; shift pressure pulse generating means connected to the said third pneumatic shift control line, said pressure pulses having a first exhaust pressure level and a second supply pressure level which is higher than said predetermined pressure, the control input of the first relay being connected to the output of the second relay, a source of permanent pressure supply connected to the supply input of the second relay, said threshold relays being arranged for providing an output signal only when the pressure at the control input thereof is less than a threshold value which is substantially lower than said predetermined pressure.

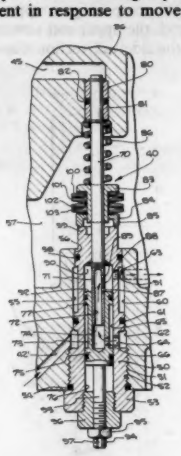
4,194,534

PRESSURE AND TEMPERATURE COMPENSATING HYDRAULIC VALVE

William A. P. Lawrence, Simi Valley, Calif., and Robert J. Welchel, Dunwoody, Ga., assignors to Elevator Equipment Co., Los Angeles, Calif.

Filed Apr. 17, 1978, Ser. No. 896,971
Int. Cl.[2] F16K *11/10*
U.S. Cl. 137—625.39 **11 Claims**

1. A compensating valve device mountable in a housing for modification of the flow of hydraulic fluid in a hydraulic circuit wherein a hydraulic fluid supply to the housing has a pressure in excess of ambient pressure, said valve device comprising a valve body having mounting means for positioning the valve device on said housing a valve chamber in said body, a valve stem reciprocatably mounted in said body, said stem having a piston at one end responsive to pressure of said hydraulic fluid, means forming a cavity in said stem adjacent the other end having an opening thereto, a valve seat member in said chamber, said valve seat member having a passage in communication with the cavity of said stem through said opening, a divider in said chamber forming respective inflow and outflow chamber sections, and port means serving as a valve element for engagement with said valve seat member and in communication between said passage and said outflow chamber section, said port means having a progressively variable capacity adjustment in response to movement of said piston



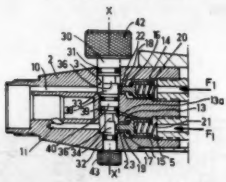
due to changes in pressure of said hydraulic fluid supply whereby to vary fluid flow between said inflow and outflow chamber sections.

4,194,535

QUICK-CLOSING MULTI-WAY VALVES

Denis Galland, Rueil Malmaison, and Jack Boursault, Genlis, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes, Paris, France

Filed Nov. 22, 1977, Ser. No. 853,856
Claims priority, application France, Nov. 22, 1976, 76 35067
Int. Cl.[2] F16K *11/14*; F23D *13/38*
U.S. Cl. 137—636.4 **13 Claims**



1. In a valve for controlling a fluid circuit, having a body provided with a bore into which open at least one fluid outlet duct and at least one fluid inlet duct which is provided with a closing valve-member which is subject to the effect of a return spring which tends to press it against a fixed seating, the invention which comprises a rotatably mounted stem which is movable in axial translation within said bore between two extreme positions of which one is an operating position and the other a shut off position, said stem defining, with said bore, an annular space which allows said inlet and outlet ducts to communicate with one another, and being provided with means for controlling said valve member which, in the operating position, cooperate with said valve member to lift it from its seating in opposition to said return spring and which, in the shut off position, permits the valve member to return to said seating, means carried by said stem and including a pair of spaced sealing members for forming a gap therebetween which is isolated with respect to the outlet duct, and means defining an auxiliary passage between said inlet duct and said bore to bypass said closing valve member, said auxiliary passage communicating with said outlet duct when said stem is in said operating posi-

tion and communicating with said isolated gap when said stem is in said shut-off position.

4,194,536

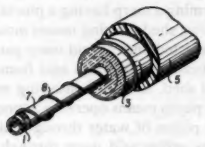
COMPOSITE TUBING PRODUCT

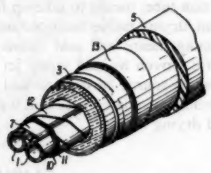
Clifford R. Stine, Solon, and Rudolph G. Wojtecki, Mantua, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 749,055, Dec. 9, 1976, abandoned. This application May 26, 1978, Ser. No. 909,786

Int. Cl.[2] F16L *11/12*; H05B *3/58*

U.S. Cl. 138—149 **34 Claims**





1. An elongate, deformable, composite tubing product having a central longitudinal axis therethrough and adapted for use in conveying a fluid from one point to another and providing means for maintaining or controlling the temperature of the conveyed fluid, said tubing product comprising; at least one tubular fluid conveyance line means, a plurality of sheet-like layers of flexible, flame resistant, low chlorine bearing, low bulk, fibrous glass elements contained in a resinous binder, each of said layers wound one about the other and around said line means to form a thermal insulating barrier member about said line means, each of said layers having a thickness of from 0.025 to 0.075 inch and a density of less than 20 lb./cu. ft., each of said layers having a chlorine content of less than about 500 parts by weight per million parts by weight of said layer, and each of said layers having at least one undulated surface whereby facing surfaces of the said layers have spaces therebetween which entrap air and contribute to the heat insulating properties of the thermal insulating barrier.

4,194,537

ARRANGEMENT FOR GUIDING A WEFT THREAD END UNDER TENSION TOWARD A FABRIC FELL IN TRAVELLING-WAVE LOOMS

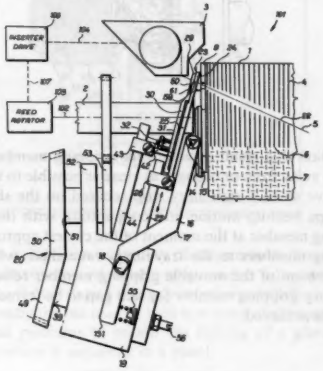
Miloslav Hodr; Josef Holub, both of Usti nad Orlici, and Jiri Stefek, Zamberk, all of Czechoslovakia, assignors to Vyzkumny ustav bavinarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 4, 1976, Ser. No. 729,203

Int. Cl.[2] D03D *49/70*

U.S. Cl. 139—194 **6 Claims**

1. In a travelling-wave loom, a rotary reed having an inner, weft-entering, end and an outer, weft-leaving, end, the rotary reed having a helical groove therein for guiding and beating up a weft thread positioned in cooperative relation thereto as the reed is rotated, means for rotating the reed about a first axis, a weft-introducing disc fixedly supported coaxial with and on the outer end of the reed, the disc having a plurality of spaced teeth on its periphery, a thrust plate supported in contacting relation with the outer surface of the disc and urged thereagainst, the space between the disc and the thrust plate defining a weft-securing space to receive the end of a weft thread leaving the reed for applying tension to the weft thread when the thread is beat-up by the reed, weft insertion means carrying the weft thread and supported for movement in timed relation to the rotation of the reed along an endless path having a portion parallel to the first axis and extending past the reed, elongated weft-gripping means independent of the thrust plate



and including a pair of cooperable jaws having confronting weft-gripping portions, the weft-gripping means being supported for reciprocation between a first front position in which the jaws are engageable with the weft thread after the insertion means has moved past the reed and a rear position rearward of the thrust plate whereby a movement of the gripping means from the front position to the rear position when a weft thread is gripped thereby will move the weft thread into the weft-securing space, means for reciprocating the weft-gripping means in timed relation to the movement of the weft-insertion means so that the gripping means reaches its front position substantially immediately after the insertion means has moved past the end of the reed, and jaw-operating means dynamically coupled to the reciprocating means for closing the jaws after the weft-gripping means has reached its front position and for reopening the jaws after the weft is in the weft-securing space.

4,194,538

WEFT THREAD GRIPPING MECHANISM FOR A LOOM WITH A TRAVELLING-WAVE SHED AND A DISK-TYPE BEAT-UP MOTION

Valerian A. Borodin, ulitsa Gubkina, 4, kv. 74; Lidia M. Sudakova, Dubninskaya ulitsa, 10, korpus 5, kv. 38, and Nikolai I. Kolobanov, Leninsky prospekt, 94a, kv. 54, all of Moscow, U.S.S.R.

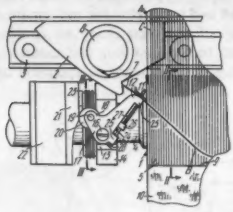
Filed Jan. 8, 1979, Ser. No. 2,014

Int. Cl.[2] D03D *47/26*

U.S. Cl. 139—194 **8 Claims**

1. A weft thread gripping mechanism for a loom with a travelling-wave shed, a disk-type beat-up motion provided with a shaft and forcing the weft thread to a fell of a cloth, and with weft thread carriers propelled through the travelling-wave shed, comprising: two gripping members elastically tightened together and installed at the side of exit of the weft thread carriers from the travelling-wave shed, one of said gripping members being stationary and the other one, movable

and installed so as to be displaceable relative to the stationary gripping member for forming a gap therebetween into which the weft thread from the carrier is received, said gripping members being mounted on the shaft of the disk-type beat-up motion so as to be rotatable therewith and displaceable, after gripping the weft thread, lengthwise the axis of the shaft of the disk-type beat-up motion in the direction from the travelling-wave shed; a means for said displacement of said gripping members lengthwise the axis of the shaft of the disk-type beat-



up motion as a result of which the gripping members may be moved away from or brought as close as possible to the travelling-wave shed; a stationary stop secured on the shaft of the disk-type beat-up motion and cooperating with the movable gripping member at the moment of the closest approach of the gripping members to the travelling-wave shed, whereby the displacement of the movable gripping member relative to the stationary gripping member for said gap to be formed therebetween is achieved.

4,194,539

LOOM SHUTTLE

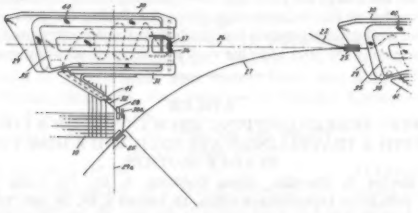
John D. Griffith, Cleadon, England, assignor to Bonas Machine Company Limited, Sunderland, England

Filed May 22, 1978, Ser. No. 907,957

Claims priority, application United Kingdom; May 25, 1977, 21991/77

Int. Cl.[2] D03J *5/06*

U.S. Cl. 139—196.3 **9 Claims**



1. A loom shuttle for use with a traveling wave shedding loom including a yarn chamber having an entry/exit opening for receiving randomly loaded yarn characterized in that the yarn chamber is provided with movable means resiliently loaded to restrain full opening which during loading of the yarn is adapted to open only slightly to effectively serve to increase the chamber size to enable yarn to be entered into the chamber through said opening substantially without restraint and with restraining means arranged, during usage of the yarn, to restrain it against free withdrawal through said opening thereby to prevent the formation of entanglements in the yarn.

4,194,540

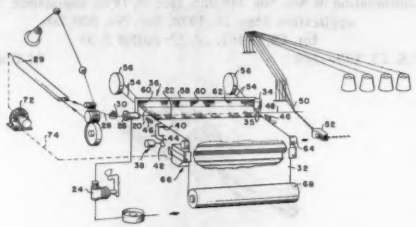
WATER JET LOOM

James R. Reynolds, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 18, 1978, Ser. No. 952,284

Int. Cl.[2] D03D *49/00*

U.S. Cl. 139—291 R **10 Claims**



1. A water jet loom having: a frame; warp forming means mounted on said frame for forming a warp having a plurality of substantially parallel warp yarns; shed forming means mounted on said frame for displacing selected ones of said warp yarns to form a shed; weft inserting means mounted on said frame for inserting weft yarns into said shed, said weft inserting means including a jet nozzle, and jet pump means operably connected to said jet nozzle for forcing pulses of water through said jet nozzle and forcing weft yarns across said warp through said shed; said weft inserting means including a suction tube to store weft yarn and means to apply suction pressure to said suction tube, means to take-up fabric woven by said water jet loom, drying means mounted on said frame between said shed forming means and said means to take-up fabric to dry the fabric woven by said water jet loom and means to supply a separate source of heat to said drying means from a source operably associated with said water jet loom and separate from said drying means.

4,194,541

WIRE STRAIGHTENING APPARATUS HAVING A HYDRAULICALLY DRIVEN WIRE FEED

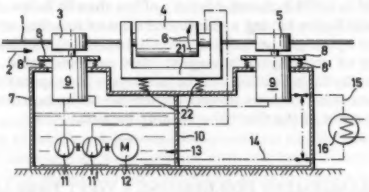
Günter Ditges, Cologne, Fed. Rep. of Germany, assignor to Myer, Roth & Pastor Machinenfabrik GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 916,835

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1977, 2732402

Int. Cl.[2] B21E *1/02*

U.S. Cl. 140—147 **10 Claims**



1. In a wire straightening apparatus including a machine stand; a wire straightening device; mounting means for securing the wire straightening device to the stand; an inlet roller pair and an outlet roller pair; mounting means for securing the inlet roller pair and the outlet roller pair to the stand adjacent opposite sides of the wire straightening device for feeding a wire therethrough; and drive means for rotating the roller pairs; the improvement wherein said drive means comprises a

first constant-volume hydraulic motor connected to at least one of the rollers of said inlet roller pair; a second constant-volume hydraulic motor connected to at least one of the rollers of said outlet roller pair; and means supplying hydraulic medium under pressure to said motors; further wherein said mounting means for said inlet roller pair, said outlet roller pair and said wire straightening device comprises separate support blocks each connected to said stand by respective resilient means; the improvement further comprising a blocking mechanism operatively connected to said wire straightening device; said blocking mechanism having an actuated state in which it rigidly connects said wire straightening device with said stand.

4,194,542

DEVICE IN AN APPARATUS FOR PROCESSING TREES

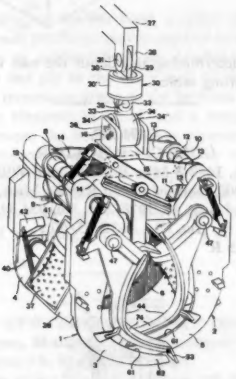
Jan. A. L. Eriksson, Pl. 345, 810 20 Österfärnebo, Sweden

Filed Mar. 16, 1978, Ser. No. 887,350

Claims priority, application Sweden, Mar. 18, 1977, 7703102; Sep. 1, 1977, 7802680

Int. Cl.[2] A01G *23/08*; B27L *1/00*

U.S. Cl. 144—2 Z **19 Claims**



1. An apparatus for processing trees comprising a grabbing device including at least two grabbing arms being movable towards and away from each other in order to grab a tree, at least one limbing member to limb the tree, and at least two rolls to feed the tree through the apparatus, said rolls being arranged on said grabbing arms in order to follow the grabbing arms in their movements towards and away from a tree movement path through the apparatus, said apparatus being connected to a crane arm through a first rotational connection allowing a pivotal movement of the apparatus relative to the crane arm in an essentially vertical plane, the apparatus being connected to the crane arm through a second rotational connection having an essentially vertical axis about which the apparatus is rotatable in a suspended state by means of a drive means with said grabbing arms depending downwardly from said second rotational connection, said rolls being pivotable relative to the grabbing arms about shafts extending essentially perpendicularly to the axes of rotation of said rolls and essentially normal to the plane of movement of the grabbing arms.

4,194,543

GROOVING INDEXER FOR ROUTING APPARATUS

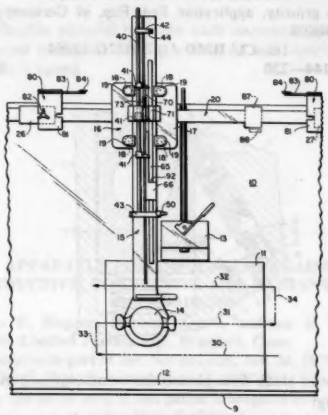
Lawrence M. Cotton, New Bern, N.C., assignor to The Stanley Works, New Britain, Conn.

Filed Sep. 13, 1978, Ser. No. 941,851

Int. Cl.[2] B27C *5/10*

U.S. Cl. 144—137 **15 Claims**

1. A grooving indexer attachment for routing apparatus of the type having a base, means for securing a panel to be routed in predetermined position on the base, a rail extending parallel to one edge of a panel secured in said predetermined position, a carriage mounted on the rail for movement along the rail, and a bar having means for mounting a router on the end thereof mounted on the carriage for longitudinal reciprocal movement and extending over the base at right angles to the rail, said



attachment comprising a plurality of stops mounted on the bar in longitudinally spaced relationship, and a releasable latch mounted on the carriage for engagement sequentially with said stops, whereby the bar may be held in a series of predetermined longitudinal positions to permit the routing of a plurality of parallel grooves in sequence in a panel.

4,194,544

SPLITTING DEVICE

Lewis A. Scott, Lake Oswego, and Duane M. Gibson, Milwaukie, both of Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Jul. 31, 1978, Ser. No. 929,860

Int. Cl.[2] B27L *7/00*

U.S. Cl. 144—193 D **7 Claims**

1. A splitting device adapted to be driven by a striking force from a maul for splitting logs comprising: an elongate conical like member produced from a material such as metal and converging to a point which is adapted for startup penetration into a log end, gripping means provided on said member adjacent the point to facilitate holding of the device in the log during startup penetration, said member being symmetrically flared from the point to a head portion, said head portion being dimensionally contained within the outer dimension of the flared member and adapted to receive a striking force from a maul independent of the splitting device for driving the point and following symmetrically flared portion of the member and including the head portion as necessary into the log thereby to produce multi-directed splitting forces to seek out the weakest splitting section line of the log and effect splitting of such log.

4,194,545

CUTTER BLOCK ARRANGEMENT FOR WOOD CHIPPING MACHINES

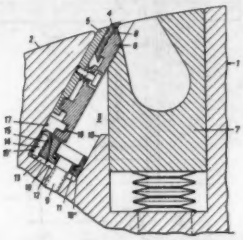
Karl H. Köstermeier, Wollstein, Fed. Rep. of Germany, assignor to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed Jun. 29, 1978, Ser. No. 920,498

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730800

Int. Cl.[2] B26D *1/12*; B27G *13/04*

U.S. Cl. 144—230 **9 Claims**



2. A cutter block arrangement for wood chipping machines comprising:

a cutter block body having grooves with bases at their bottoms,

holding ledges, each ledge being provided in a respective one of said grooves,

fastening screws for fastening said holding ledges to said cutter block body in a fastening direction toward the base of the groove,

spring elements provided between said holding ledges and said fastening screws,

blade holders, each holder being fastened to a respective holding ledge by a tongue and groove connection,

blades having cutting edges and being positively held in said blade holders, and

adjusting screws for supporting said holding ledges at an adjustable distance relative to the bases of the respective grooves in said cutter block body, and in a direction opposite to the fastening direction of said fastening screws, for adjustment of a certain projection of said cutting edges.

4,194,546

GARMENT NAIL ALIGNMENT BLOCK

Donald W. Wooley, 1017-B Cascade St., Mesquite, Tex. 75149

Filed Mar. 20, 1978, Ser. No. 888,160

Int. Cl.[2] B25C *3/00*

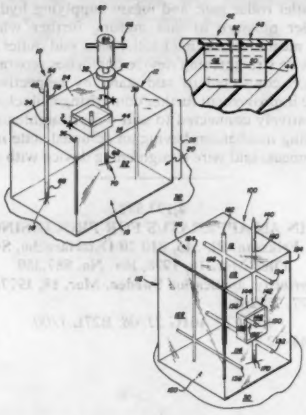
U.S. Cl. 145—46 **9 Claims**

1. A garment nail alignment device for aligning garment nails normal to a garment cutting table, comprising:

a transparent block having at least one planar surface;

means for marking a garment nail to indicate the length of the garment nail to be set into the garment cutting table; and

at least one right circular cylindrical garment nail alignment hole dimensioned to closely engage the garment nail and formed completely through and normal to said planar surface of said block, such that a spot on the garment cutting table where a garment nail is to be set normal to the table is visible through said transparent block for aligning said hole over the spot and the garment nail marked by said marking means is visible through said



block for determining the depth the nail is set into the garment cutting table.

4,194,547

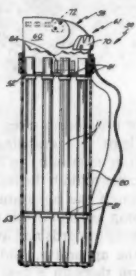
GOLF CLUB HOLDER

Edward J. Sidor, 1482 3 Mile Rd. NE., and William E. Sidor, 1816 4 Mile NE., both of Grand Rapids, Mich. 49505

Filed Aug. 17, 1978, Ser. No. 934,395

Int. Cl.[2] A63B *55/00*

U.S. Cl. 150—1.5 R **32 Claims**



21. A golf club holder assembly comprising in combination:

a plurality of elongate tubes of a resilient material;

first and second ends oppositely and longitudinally disposed on each of said tubes;

said first ends of said tubes being open and adapted for receiving a golf club handle and shaft;

spring clip means disposed in each of said tubes and formed from each of said tubes for resiliently gripping a golf club handle and detachably retaining the same within each of said tubes;

said spring clip means comprising at least one longitudinally extending fold disposed in each said tube for gradually reducing the cross-sectional area of said tube;

first and second tube sheets for retaining said tubes in parallel array; and

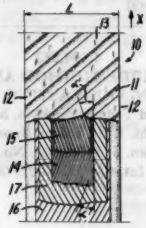
a rack disposed above said first ends of said tubes for separating a plurality of golf clubs retained in said tubes, whereby each of the clubs is completely isolated and retained within the assembly even when the assembly is held upside down.

4,194,548

TIRES

Jack Roger, Romagnat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 20, 1978, Ser. No. 898,470
Claims priority, application France, Apr. 24, 1977, 77 13473
Int. Cl.[2] B60C 9/20
U.S. Cl. 152—361 R **8 Claims**



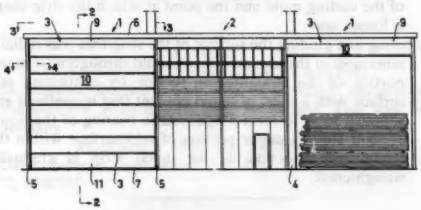
1. Tire having, on the one hand, a radial carcass reinforcement and a tread reinforcement formed of at least two plies of oblique wires or cables which are parallel in each ply and crossed from one ply to the other and, on the other hand, a tread having transverse grooves, the bottoms and the walls of which define elements in relief, and a nongrooved portion arranged between the bottoms of the transverse grooves and the tread reinforcement, characterized by the fact that the tread comprises, in said nongrooved portion, at least one ply of relatively inextensible oblique wires or cables forming an angle of at most 60° with the circumferential direction, the axial width of said ply being between $\frac{1}{4}$ and $\frac{1}{2}$ of the width of the tread.

4,194,549

UPWARDLY OPENABLE DOOR

Anders Lövgren, Skellefteå, Sweden, assignor to Alfred Lovgrens Byggnads Ab, Skellefteå, Sweden

Continuation of Ser. No. 741,840, Nov. 15, 1976, abandoned, which is a continuation of Ser. No. 345,373, Mar. 6, 1973, abandoned. This application May 1, 1978, Ser. No. 901,946
Claims priority, application Sweden, Mar. 6, 1972, 2807/72
Int. Cl.[2] A47H 5/00
U.S. Cl. 160—84 R **4 Claims**



1. A collapsible door apparatus comprising:

a door member having a plurality of generally horizontal rigid spaced members, and at least one sheet of flexible material fastened to said spaced members;

a door frame including vertically disposed channel means for guiding the ends of said spaced members;

said channel means comprising first and second parallel spaced members arranged parallel to the plane of the door and a third member which is perpendicular to said first and second members;

first and second roller means at each end of said rigid members, one of said rollers being located between said first and second members and the other coacting with said third member;

and door operating means for selectively moving upwardly the bottom-most of said spaced members to thereby in turn move all said spaced members as said bottom-most member upon being raised abuts the next said member and so on until all said members have been raised to open the door;

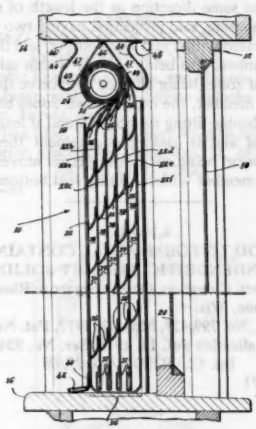
said flexible material between each successive pair of said spaced members forming a loop of said material as the door is raised.

4,194,550

APPARATUS FOR INSULATING AGAINST CONDUCTIVE, CONVECTIVE AND RADIANT HEAT TRANSMISSION

Thomas P. Hopper, Durham, Conn., assignor to Insulating Shade (Limited Partnership), Branford, Conn.

Continuation-in-part of Ser. No. 652,628, Jan. 26, 1976, Pat. No. 4,039,019. This application Jul. 19, 1977, Ser. No. 816,920
The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.
Int. Cl.[2] E06B 9/08
U.S. Cl. 160—121 R **91 Claims**



1. An apparatus for insulating an area such as a window, door, or wall against conductive, convective and radiant heat transmission comprising:

A. a plurality of essentially non-transparent imperforate, shade sheets;

B. retracting means including a single retracting roller to which all shade sheets are attached to be rolled thereon for mounting said sheets for selective movement between a drawn position covering the area and a retracted position not covering the area; and

C. spacer means mounted to separate adjacent sheets to provide a dead space therebetween, said spacer means including one spacer roller for each pair of sheets, each said spacer roller being mounted for free sheet nonabrading rotation in fixed relation to said retracting roller to contact only one of each pair of sheets when in the drawn position.

4,194,551

END PIECE FOR THE BOTTOM RAIL OF A VENETIAN BLIND

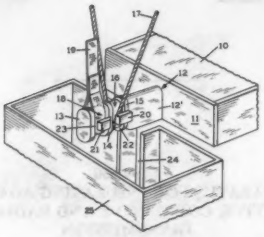
Petrus J. Hennequin, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Jun. 2, 1978, Ser. No. 911,826

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726516

Int. Cl.[2] E06B *9/38*

U.S. Cl. 160—178 R **9 Claims**



1. In an end piece for the bottom rail of a venetian blind in which blind the slats are guided in a side housing of the blind and in which the blind is actuated by means of a flexible lifting member and a flexible tilting member both of which flexible members engage with the end piece of the bottom rail, the improvement in which the end piece of the bottom rail has a projection extending outwardly of the end of said bottom rail in generally the same direction as the length of said rail and into said side housing, said projection having two axially separated zones located within said side housing, said flexible lifting and tilting members also being located within said side housing, one of said zones being adapted to receive the end of the flexible lifting member, the other of said zones being adapted toreceive the flexible tilting member around at least the bottom portion thereof and in sliding engagement therewith, said sliding engagement being such as to permit movement of said flexible tilting member without tilting said bottom rail.

4,194,552

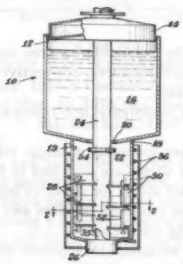
METHOD TO FORM METAL CONTAINING NONDENDRITIC PRIMARY SOLIDS

Foster C. Bennett, Columbus, Ohio, assignor to Rheocast Corporation, Mequon, Wis.

Division of Ser. No. 799,429, May 23, 1977, Pat. No. 4,116,423. This application Jul. 13, 1978, Ser. No. 924,114

Int. Cl.[2] B22D *1/00, 27/08*

U.S. Cl. 164—71 **7 Claims**



1. A method comprising:

controlling the temperature of molten metal in a metal receiving means to between the liquidus and solidus temperatures of the metal;

agitating the metal sufficiently to minimize formation of interconnected dendrites;

continuously removing metal deposited on inner wall portions of the metal receiving means to minimize accumulation of solid metal deposited on the wall portions, such metal removal being carried out using a shearing means contacting the inner wall portion;

withdrawing a mixture of solid and liquid metal from the receiving means; and

solidifying the metal.

4,194,553

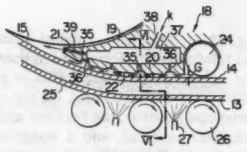
COOLING AND GUIDE METHOD AND APPARATUS IN A CONTINUOUS CASTING MACHINE

Tomoaki Kimura, and Tadashi Nishino, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,337

Int. Cl.[2] B22D *11/06*

U.S. Cl. 164—87 **15 Claims**



1. A method of cooling and guiding a strip of metal as it moves through a straightening section of a continuous casting machine of the wheel-belt caster type, comprising the steps of:

rotating a casting wheel having a peripheral groove simultaneously with moving an endless belt in contact with only a portion of the peripheral groove so as to form an arcuate casting mold with an inlet opening for receiving molten metal and an outlet opening for discharging a partially solidified strip of metal;

pouring molten metal into the inlet opening of the arcuate casting mold continuously, while continuously withdrawing the partially solidified strip of metal from the outlet opening of the arcuate casting mold so that the molten metal is partially solidified as it travels through the arcuate casting mold, and the strip of metal is bent from the arcuate shape of the casting mold to a linear shape within a straightening section defined between the outlet opening of the casting mold and the point at which the strip shape is linear; and

cooling and guiding the surface of the strip that was radially innermost in the arcuate casting mold throughout a major portion of the straightening section by contacting said surface with a sheet of liquid coolant that is confined and supplied so as to form a hydrostatic bearing of the liquid coolant along a major portion of said surface within the straightening section as the metal strip is gradually straightened.

4,194,554

PROCESS AND DEVICE FOR CENTRIFUGALLY CASTING SPHEROIDAL GRAPHITE CAST IRON PIPES

Michel Pierrel, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Continuation of Ser. No. 807,266, Jun. 16, 1977, abandoned, which is a division of Ser. No. 587,564, Jun. 17, 1975, Pat. No. 4,058,153. This application Feb. 5, 1979, Ser. No. 9,195

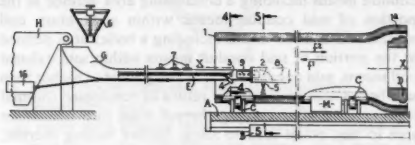
Claims priority, application France, Jul. 18, 1974, 74 24980

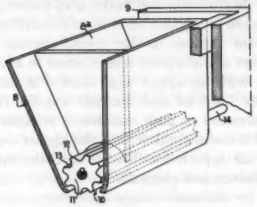
Int. Cl.[2] B22D *13/10, 13/02, 27/20*

U.S. Cl. 164—301 **6 Claims**

1. A centrifugal casting machine comprising a rotary casting mould, an elongated pouring channel having a pouring mouth

at an end thereof for pouring metal into the mould, means for moving the mould axially relative to the channel, means for dropping granular particles onto the molten metal which has been poured onto the mould surface by said channel and comprising a hopper-like box for receiving the granular particles and secured to a lateral side of the pouring channel adjacent the pouring mouth, the box having an open top side opening the interior of the box to atmosphere through which open top side the particles are intended to be placed in the box, the box having in a lower part of the box controllable aperture means through which metered amounts of said granular particles may





be dropped substantially continuously, and mechanical means associated with said controllable aperture means for controlling said controllable aperture means, said aperture means extending longitudinally of the channel from a first end of the aperture means to a second end of the aperture means which is located beyond the pouring mouth whereby to ensure that the granular particles dropped through the aperture means drop onto the metal poured onto the mould surface, the box extending a minor fraction of the channel length and terminating substantially in the region of said first end of the aperture means.

4,194,555

TUNDISH FOR CONTINUOUS CASTING

Hans Schrewe, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,167

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740725

Int. Cl.[2] B22D *11/10*

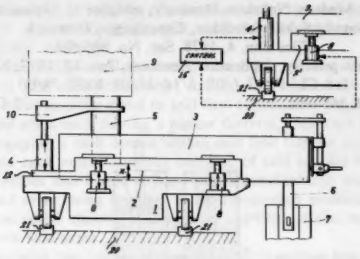
U.S. Cl. 164—438 **3 Claims**

1. In a machine, for continuous casting which includes a tundish, a discharging pipe for feeding molten metal from a ladle into the tundish, at least one mold for continuous casting and feed pipe on the tundish for feeding metal from the tundish into the mold, and a carriage for the tundish, the improvement comprising:

a lifting frame mounted on the carriage, the tundish being mounted on the frame;

first means on the carriage for lowering and lifting the frame with the tundish;

a lifting device on the carriage holding the discharging and second means operatively connected to the lifting device for obtaining a constant distance of the lower end of the casting pipe from the bottom of the tundish during lower-



ing and lifting of the frame by operation of the first means for lowering and lifting.

4,194,556

COOLING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

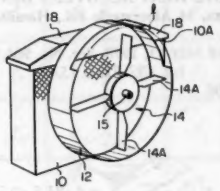
Makio Watanabe; Kaneyosi Aoyama, and Makoto Shinohara, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 14, 1978, Ser. No. 886,359

Claims priority, application Japan, Jan. 13, 1978, 53-1858

Int. Cl.[2] F28D *21/00*

U.S. Cl. 165—51 **7 Claims**



1. A reduced-noise cooling apparatus for an internal combustion engine, said apparatus including a radiator core, a coolant tank mounted on the upper end of the core, a multi-bladed fan assembly mounted adjacent to one side of the core for rotation such that the upper part of the path described by the tips of the fan blades is above the level of the upper end of the radiator core, and a tubular shroud extending from said one side of the radiator core and the coolant tank coaxially with and circumferentially surrounding the fan assembly, wherein the improvement comprises:

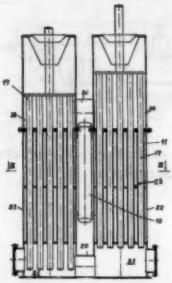
said shroud having an axial length which is less for the portion of the shroud which is above the level of the upper end of the radiator core than for the remainder of the shroud, whereby the amount of air passed through the shroud per unit area above the level of the upper end of the radiator core is less than the amount of air passed per unit area through the remainder of the shroud.

4,194,557

COOLER FOR MIXTURES OF CRYSTALS AND CRYSTALLIZING LIQUID IN THE PRODUCTION OF SUGAR AND RELATED PRODUCTS

Rud F. Madsen, Nakskov, Denmark, assignor to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Jan. 4, 1978, Ser. No. 866,903
Claims priority, application Denmark, Jan. 13, 1977, 129/77
Int. Cl.[2] F28G *1/08, 1/14, 15/08;* F28F *19/00*
U.S. Cl. 165—94 2 Claims



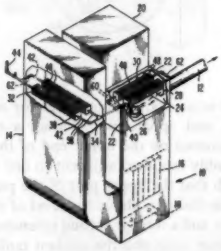
1. A cooler for mixtures of crystals and crystallizing liquid in the manufacture of sugar and related products consisting of a pipe cooler having substantially vertical pipes, which open into chambers at their bottom and top ends, characterized by the provision in the pipes of plungers which in the whole or practically the whole pipe length have a cross-sectional area somewhat smaller than the cross-sectional area of the pipe wall so as to fill out a substantial part of the cross-section of each pipe and thereby to form an annular passage along the pipe wall, the plungers being coupled to means for constantly and continuously moving them up and down through the pipes, the plungers extending at any moment the whole way through the pipes, their ends moving up and down in the bottom and top chambers.

4,194,558

WASTE HEAT RECOVERY DEVICE

Richard Goosman, 44 Albermarle Rd., Hamilton Square, N.J. 08690

Filed May 11, 1978, Ser. No. 904,948
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—105 9 Claims



1. A waste heat recovery device for heating the air traveling through a cold air return duct to a heater device comprising:

(a) an exhaust box defining a plenum chamber therein for gathering heated exhaust gases, said exhaust box defining an exhaust gas inlet and an exhaust gas outlet to admit and expel, respectively, the heated exhaust gases with respect to said exhaust gas chamber;

(b) an exhaust coil means positioned within said plenum chamber to withdraw heat therefrom, said exhaust coil means including a plurality of individual coil elements disposed at different vertical heights with respect to one another;

(c) a return coil means positioned within a cold air return of a heating device and adapted to radiate heat to raise the temperature of the air traveling through the cold air return;

(d) a conduit means and a thermal transfer fluid which is located within said conduit means, said conduit means extending through said return coil means and said exhaust coil means to cause thermal flow therebetween by condensing and boiling of said thermal transfer fluid, said conduit means including a condensing area defined as the portion of said conduit means within said return coil means, said conduit means including a boiler area defined as the portion of said conduit means within said exhaust coil means, said condensing area being located higher than said boiler area to assure the return of condensed thermal transfer fluid after cooling thereof from said condenser area to said boiler area to allow further boiling thereof; and

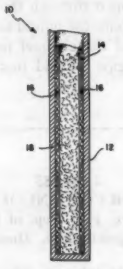
(e) a fluid level control means to maintain the level of thermal transfer fluid within said boiler area above a predetermined minimum level, said fluid level control means comprising a drain conduit in the conduit means extending upwardly from a lower level coil element to a higher level coil element with the upper edge thereof at the predetermined desired level of said thermal transfer fluid in the higher coil element to both maintain a minimum level of said thermal transfer fluid within the higher coil element and to provide a path for flow of said thermal transfer fluid to the lower coil element.

4,194,559

FREEZE ACCOMMODATING HEAT PIPE

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Leola, Pa.

Filed Nov. 1, 1978, Ser. No. 956,680
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—105 4 Claims



1. A heat pipe capable of operation without deterioration of its performance after repeated freezing and thawing cycles comprising:

a sealed outer casing;

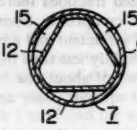
a wick, positioned in intimate contact with the inside wall of the casing and located so as to reach any location of potential liquid puddling, said wick being sufficiently flexible so that, if distorted away from the casing wall, it will be repositioned against the wall of the casing by the surface tension of the liquid state of a fluid selected as the heat exchange fluid of the heat pipe; and

a heat exchange fluid, loaded into the casing before sealing, limited in quantity to that amount which, at the melting point, will be completely retained within the wick by the capillary lifting force of the wick.

4,194,560
OIL COOLER AND METHOD FOR FORMING IT

Yoshiaki Matsuzaki, Musashino, Japan, assignor to Nihon Radiator Co., Ltd., Nakano, Japan

Continuation-in-part of Ser. No. 771,495, Feb. 24, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 944,107
Claims priority, application Japan, Mar. 19, 1976, 51-32247
Int. Cl.[2] F28D 7/10
U.S. Cl. 165—141 6 Claims

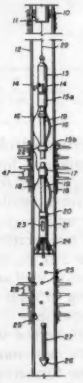


1. An oil cooler built in a radiator comprising:
an outer tube; and
an inner tube formed with a plurality of a series of dent portions in the axial direction thereof, each series having an odd number of dents equally spaced about said inner tube with rounded apexes for contacting the inner surfaces of the outer tube, each said series forming a regular polygon having an odd number of sides on a plane perpendicular to the axis of said inner tube and each adjacent said series rotated about the axis of said inner tube so that the apexes of an adjacent series is at the mid-point of the dents of the preceding series;
said inner tube positioned inside said outer tube with said apexes of said inner tube contacting the inner surface of said outer tube for defining oil passages between said tubes at the non-contacting regions whereby oil flows in said oil spaces between said tubes in zigzag fashion along the length of said tubes.

4,194,561
PLACEMENT APPARATUS AND METHOD FOR LOW DENSITY BALL SEALERS

Charles O. Stokley, and Steven R. Erbstoesser, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Nov. 16, 1977, Ser. No. 852,174
Int. Cl.[2] E21B 33/124
U.S. Cl. 166—162 23 Claims

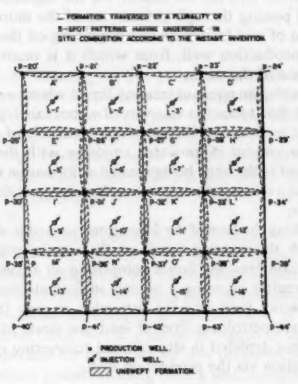


1. An apparatus for selective placement of ball sealers for fluid treatment of a well, said ball sealers having a density less than the density of said fluid, comprising:
a first tubular member,
a second tubular member slidably mounted within said first tubular member,
a first expandable diaphragm having a first frusto-conical section attached at the small diameter of said frusto-conical section to said first tubular member at one end thereof, said expandable diaphragm extending beyond said first tubular member,
a plurality of pivotally mounted extendable arms mounted to said first tubular member toward the end of said first tubular member distal to said first expandable diaphragm, said arms each having a pinion thereon, each said pinion engaging a rack means within said first tubular member, said rack means abutting one end of said second tubular member and biased toward said second tubular member, said arms being retained in an unextended position by a first collar slidably mounted on said first tubular member over said arms,
a retaining cap having means thereon to engage and retain said first expandable diaphragm in an unexpanded position,
a push off member connected to said retaining cap and abutting the end of said second tubular member distal to said rack means and,
means releasably holding said push off member in position.

4,194,562
METHOD FOR PRECONDITIONING A SUBTERRANEAN OIL-BEARING FORMATION PRIOR TO IN-SITU COMBUSTION

Issam S. Bousaid; Donald L. Hoyt, both of Houston, and Ralph J. Korstad, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,130
Int. Cl.[2] E21B 43/24
U.S. Cl. 166—245 8 Claims



1. In a method for the recovery of oil from a subterranean oil-bearing formation utilizing in-situ combustion, said formation being traversed by a plurality of wells in adjacent well pattern units, each of said well pattern units having a central well and n spaced offset wells, the improvement comprising, preconditioning of said formation by the injection of a gas thereinto, prior to the initiation of said in-situ combustion, said preconditioning comprising the steps of:
(a) selecting one of said well pattern units having a central well and n offset wells and injecting said gas into said central well while simultaneously restricting flow from said n offset wells and from said wells in said adjacent pattern units,
(b) continuing injection of said gas into said central well until the pressure in said formation traversed by said selected pattern unit is increased to a value less than the fracturing

pressure of said formation and gas is produced from said n offset wells,

(c) shutting-in said central well and said n offset wells,

(d) selecting a second of said pattern units comprising a second central well and its related n offset wells and injecting gas into said second central well while simultaneously restricting flow from said related n offset wells and from said wells in said adjacent pattern units,

(e) sequentially repeating steps (a) through (d) for the remaining well pattern units until all said pattern units of said formation have undergone said preconditioning by the injection of gas thereinto,

(f) undertaking an in-situ combustion operation in said formation.

4,194,563

HIGH CONFORMANCE ENHANCED OIL RECOVERY PROCESS

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,420
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—273 **25 Claims**

1. A method of recovering petroleum from a subterranean, petroleum-containing formation, said formation containing water having a salinity of from 5000 to 240,000 parts per million total dissolved solids, said formation containing at least two distinct petroleum-containing strata, the permeability of at least one stratum being at least 50 percent greater than the permeability of the other stratum, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with substantially all of the strata of said formation, comprising

(a) injecting a first aqueous surfactant-containing oil-displacing fluid into the formation via the injection well, said fluid passing through at least one of the more permeable strata of said formation and displacing oil therein toward the production well, from which it is recovered to the surface of the earth;

(b) injecting an aqueous treating liquid whose viscosity is no more than twice the viscosity of water, said liquid containing at least one surfactant which is capable of producing a stable viscous oil-in-water emulsion with the petroleum present in the zone being treated at formation temperature and at a salinity about equal to the salinity of the formation water;

(c) flushing the face of the formation exposed to the well into which the treating liquid of (b) was injected, with an emulsion breaking liquid comprising an alcohol; and

(d) thereafter injecting a second surfactant-containing, oil-displacing fluid into the formation to pass through and displace petroleum from at least one strata of the formation not depleted in step (a), and recovering oil from the formation via the production well.

4,194,564

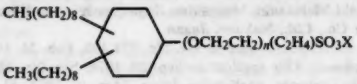
OIL RECOVERY METHOD

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 10, 1978, Ser. No. 950,198
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—274 **12 Claims**

1. A process for recovering petroleum from an underground reservoir wherein the reservoir is penetrated by at least one injection well and at least one production well, said wells being in fluid communication with each other, and wherein the reservoir contains a brine with from 50 to 220 kg/m^3 salinity comprising:

(a) preparing a surfactant solution wherein the surfactant is an alkylaryl polyethoxy alkylene sulfonate of the formula:



wherein n is a number from 2 to 8 and X is a cation, which exhibits phase stability when mixed with small amounts of crude oil or distilled fractions thereof and a brine, said surfactant solution comprising from about 0.05 to 10.0 percent by weight surfactant and a brine or diluted brine having a salinity slightly less than the salinity required to produce partitioning of about one half of the surfactant solution out of the aqueous phase and into oil and emulsion phases;

(b) injecting the surfactant solution through the injection means into the underground reservoir;

(c) injecting a driving agent; and

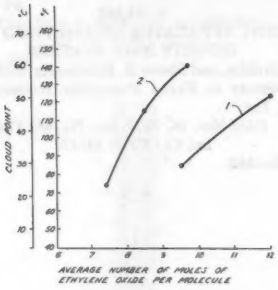
(d) recovering petroleum from the production means.

4,194,565

SURFACTANT OIL RECOVERY METHOD FOR USE IN HIGH TEMPERATURE FORMATIONS CONTAINING WATER HAVING HIGH SALINITY AND HARDNESS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 786,165, Apr. 11, 1977, Pat. No. 4,120,358, which is a continuation-in-part of Ser. No. 643,965, Dec. 24, 1975, Pat. No. 4,016,932. This application Mar. 27, 1978, Ser. No. 890,332
The portion of the term of this patent subsequent to Apr. 12, 1994, has been disclaimed.
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—275 **5 Claims**



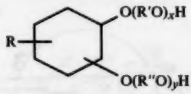
1. A method for recovering petroleum from a subterranean, permeable, petroleum-containing formation which formation also contains water having salinity from about 40,000 to about 140,000 parts per million total dissolved solids including from 2,000 to 12,000 parts per million divalent ions including calcium and magnesium, the temperature of said formation being from about 80° F. to about 180° F., said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with the petroleum formation, comprising:

(a) injecting into the formation via the injection well, an aqueous, saline, surfactant-containing fluid to displace petroleum through the formation toward the production well, the salinity of the fluid being about equal to the salinity of the formation water, said surfactant containing fluid comprising:

(1) an organic sulfonate anionic surfactant selected from the group consisting of petroleum sulfonate, alkyl sulfonates having from 6 to 25 carbon atoms, alkylaryl sulfo-

nates having from 5 to 20 carbon atoms in the alkyl chain, and mixtures thereof; and

(2) a dipolyalkoxylated alkyl catechol having the following formula:



wherein R is an alkyl group, linear or branched, containing from 5 to 25 carbon atoms, R′ and R″ are each ethylene or a mixture of ethylene and higher alkylene with relatively more ethylene than higher alkylene, x and y are each 1 to 12 and the sum of x and y is from 2 to 24, wherein the total number of ethoxy groups per molecule of said dipolyethoxylated alkyl catechol is chosen so that the cloud point thereof is from 2° to 40° F. greater than the temperature of the formation; and

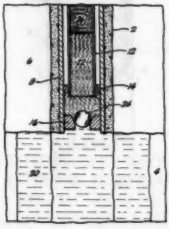
(b) recovering petroleum displaced by a surfactant-containing fluid from the formation via the producing well.

4,194,566

METHOD OF INCREASING THE PERMEABILITY OF SUBTERRANEAN RESERVOIRS

George P. Maly, Newport Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Oct. 26, 1978, Ser. No. 954,993
Int. Cl.[2] E21B *43/26, 43/27*
U.S. Cl. 166—307 20 Claims



1. A method for acidizing and/or fracturing a hydrocarbon-containing subterranean reservoir penetrated by a well comprising:

(a) locating in a well conduit above a point of fluid entry into the reservoir a restriction means having therein a seat for a closure means;

(b) injecting into the reservoir via the well conduit a slug of an acidizing or fracturing fluid;

(c) injecting into the well conduit a slug of a displacement fluid containing a closure means adapted to fit into the seat of said restriction means;

(d) injecting into the well conduit a slug of a weighted aqueous kill fluid;

(e) continuing the injection of the slug of kill fluid until the closure means seats in the seat; and

(f) preparing the well for further service.

4,194,567

METHOD AND APPARATUS FOR BALANCING PRESSURES IN AN OIL WELL

Lionel R. Marais, Paris, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Oct. 26, 1978, Ser. No. 954,806
Claims priority, application France, Oct. 27, 1977, 77 32447
Int. Cl.[2] E21B *21/00, 41/00*
U.S. Cl. 166—311 18 Claims

1. A method balancing the low pressures of fluids in subsurface strata communicating with a well comprising the steps of:

(a) disposing at the bottom of said well a first fluid;

(b) maintaining the surface of said first fluid at a level below the ground corresponding to a hydrostatic pressure exerted by the fluid on the adjacent subsurface strata, said pressure being slightly above the pressure of the fluids in the strata;

(c) providing a set of rods within said well;

(d) driving said first fluid by a second fluid having a density lower than the density of the first fluid to thereby circulate said first fluid exclusively below said corresponding level, said circulation comprising an upward flow of said first and second fluids within a common region of said well.

10. An apparatus for balancing the low pressures of fluids in subsurface strata communicating with a well comprising:

(a) a well bore having tubing disposed at its interior surface;

(b) means for containing a first fluid at the bottom of said well, and for maintaining the surface of said first fluid at a level below the ground corresponding to a hydrostatic pressure exerted by the fluid on the adjacent surface strata, said pressure being slightly above the pressure of the fluid in the strata;

(c) a set of rod means disposed within said well providing a path for a second fluid having a density less than said first fluid;

(d) means for driving said first fluid by said second fluid;

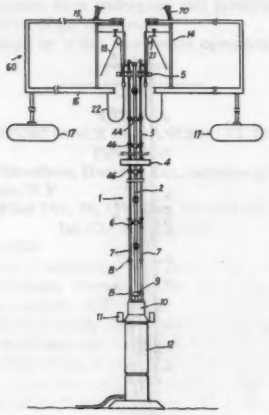
(e) means for circulating said first fluid exclusively below said corresponding level under control of the second fluid;

(f) wherein said circulating means further provide an upward flow of said first and second fluids within a common region of said well.

4,194,568
DISCONNECTABLE RISER COLUMNS FOR UNDER WATER OIL WELLS

Georges Burèsi, Versailles; Olivier C. Roche, Marseille, and Michel B. Viallard, Paris, all of France, assignors to Compagnie Francaise des Petroles, S.A., Paris, France

Filed Jul. 3, 1978, Ser. No. 921,539
Claims priority, application France, Jul. 1, 1977, 77 20268
Int. Cl.[2] E21B 7/12
U.S. Cl. 166—340 18 Claims



1. A riser column for connection between a submerged installation and surface support means, said riser column comprising:

a central tube;

means permitting oscillation of said central tube when connected to the submerged installation;

suspension means for association with the surface support means for suspension of said central tube;

support means connected to said central tube at a level below that at which waves are effective;

a plurality of satellite tubes arranged about said central tube, each said satellite tube comprising a bottom part extending between said support means and the submerged installation and a top part extending from said support means to said suspension means; and

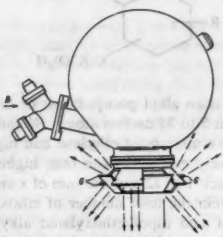
connecting means for releasably connecting said bottom parts to said satellite tubes to said top parts of said satellite tubes, said connecting means including means for retaining the bottom parts of said satellite tubes suspended underwater with respect to said submerged installation upon the disconnection of said top and bottom parts of said satellite tubes.

4,194,569
FIRE EXTINGUISHERS

Richard C. Heath, 3, Barham Close, Weybridge, Surrey, England, assignor to Richard Charles Heath, Weybridge, England

Filed Nov. 21, 1977, Ser. No. 853,657
Claims priority, application United Kingdom, Nov. 22, 1976, 48658/76
Int. Cl.[2] A62C 35/02
U.S. Cl. 169—26 1 Claim

1. A fire extinguisher comprising a container providing a source of extinguishant, a circular burstable diaphragm closing said container and permitting, upon bursting thereof, a high mass flow rate of extinguishant from the container, and venting means comprising a generally circular end cap overlying said diaphragm, said end cap comprising an even number of radial outlet ports through which extinguishant flowing from the container is discharged, said outlet ports being regularly angularly spaced about its periphery whereby each outlet port is balanced by a corresponding port diametrically opposed thereto and wherein said outlet ports are associated with deflector plates for deflecting said extinguishant axial with respect to said circular end cap, the said deflector plate of alternate ports being angled in opposite directions, whereby the axial reaction forces due to discharge of extinguishant from alternate ones of said outlet ports balanced by an opposite reacting axial force due to discharge of extinguishant from the remaining ports.



4,194,570
FLOW MOMENTUM REVERSING FIRE ABATEMENT SYSTEM

Jose P. Arencibia, Jr., Bethlehem, Pa., assignor to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Dec. 4, 1978, Ser. No. 965,817
Int. Cl.[2] A62C 3/04
U.S. Cl. 169—46 7 Claims

1. A device for extinguishing combustible fluids exiting from a pipe which device comprises:

(a) an extinguisher body having inlet and outlet ends and passageway therebetween adapted for coupling the extinguisher body in the pipe for passage of the entire flow of the combustible fluid through the extinguisher body;

(b) a conical diffuser coaxially mounted in said extinguisher body with the apex of the conical diffuser oriented towards the outlet of the extinguisher body;

(c) an extinguisher fluid nozzle coaxially mounted in the extinguisher body between the conical diffuser and outlet end proximate the apex of the conical diffuser for discharge of an extinguisher fluid towards the inlet end of the extinguisher body and against the apex and convex surface of the conical diffuser; and

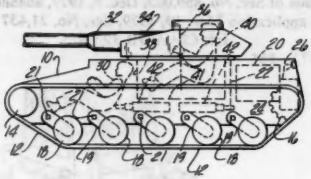
(d) means for supplying a high momentum source of extinguisher fluid to the nozzle from outside of the extinguisher body.

4,194,571

FIRE SUPPRESSION MECHANISM FOR MILITARY VEHICLES

Anthony J. Monte, 47660 Bluebird, Utica, Mich. 48087

Filed Feb. 23, 1979, Ser. No. 14,502
Int. Cl.[2] A62C 35/12
U.S. Cl. 169—61 4 Claims



1. In a tracked military vehicle comprising a hull subdivided into a rear engine compartment and a forward driver compartment, a turret rotatably mounted on a central portion of the hull upper wall and having a basket depending therefrom into the hull interior space, the hull having a bottom wall spaced below the basket to define an intervening clearance space; the improvement comprising fire suppressant means disposed in the aforementioned clearance space, said fire suppressant means comprising first horizontally-oriented cylinder means underlying the rear portion of the basket and second horizontal cylinder means underlying the front portion of the basket, each said cylinder means comprising a cylindrical pressure vessel having end walls and an intermediate floating piston, a flashable vapor fire suppressant material changed into the space between one end wall and the piston, an inert pressurized gas charged into the space between the other end wall and said piston, an electrically-operated valve mounted on said one end wall of each pressure vessel to control the escape of pressurized suppressant from the vessel; the cylinder means being oriented so that the first cylinder means discharges suppressant to the engine compartment and the second cylinder means discharges suppressant to the driver compartment.

4,194,572

FIRE EXTINGUISHING APPARATUS FOR LARGE OIL STORAGE RESERVOIRS

Jean P. Thery, Le Chesnay; Claude M. Alban, Charenton, and Albert P. Jordi, La Caviere d'Azur, all of France, assignors to Compagnie Francaise des Petroles, S.A., Paris, France

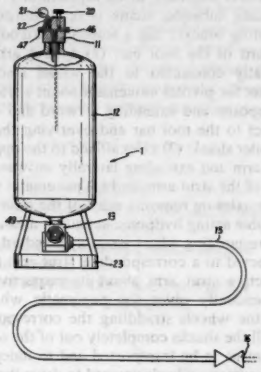
Filed May 4, 1976, Ser. No. 682,932
Claims priority, application France, May 6, 1975, 75 14078
Int. Cl.[2] A62C 35/00
U.S. Cl. 169—66 11 Claims

1. Fire extinguishing apparatus comprising:

a plurality of reservoirs for storing a fire inhibitor product under pressure;

a plurality of thin wall plastic tubes filled with a gas selected from the group comprising air and inert gases at a pressure in the range of 1.2 to 4 bars, and tubes adapted to burst when exposed to a predetermined temperature and having a wall thickness selected to withstand the pressure of the inhibitor product only during flow therethrough;

a plurality of differential valve means individually connecting said plastic tubes to said reservoirs and which are normally closed, each differential valve means adapted to open automatically to allow inhibitor product to pass from a reservoir to an associated plastic tube when a sudden drop in gas pressure in said tube occurs upon bursting, and a plurality of capillary



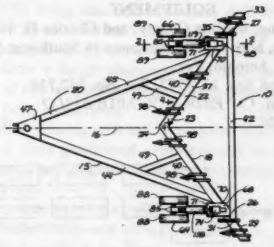
tubes individually connecting said thin wall plastic tubes to a single device for compensating for leaks from the tubes.

4,194,573

AGRICULTURAL SUBSOIL IMPLEMENT INCLUDING FLOW DIVIDER FOR WHEEL ASSEMBLIES

Gale F. Rettkowski, Wilbur, Wash., assignor to R & R Agri-Products, Inc., Wilbur, Wash.

Filed May 22, 1978, Ser. No. 908,137
Int. Cl.[2] A01B 63/22, 13/08
U.S. Cl. 172—400 5 Claims



1. An agricultural draft drawn subsoil implement, comprising:

a draft frame assembly for attaching to and being drawn by a tractor in which the frame assembly includes a rigid A-shaped tool bar frame aligned along a center line of the implement with (1) a V-shaped tool bar that extends from an apex rearward and outward on opposite sides of the center line, and (2) a cross frame element interconnecting the V-shaped tool bar spaced from the apex;

a plurality of subsoiler tools adjustably mounted at laterally spaced locations along the V-shaped tool bar for engaging the soil;

each of said subsoiler tools having a shank with a parabolic shaped leading edge that extends downward and forward from the tool bar for engaging and breaking the subsoil at an angle sufficient to bias the subsoiler tools downward as the implement is pulled by the tractor;

wherein the subsoiler tools have adjustable tool mounting brackets that permit the subsoiler shanks to be repositioned laterally on the tool bar;

two independent wheel assemblies mounted to the V-shaped tool bar on opposite sides of the center line of the implement;

each of the wheel assemblies having (1) a wheel assembly

mounting bracket adjustably mounted to the tool bar in alignment with a corresponding subsoiler shank to enable the wheel assembly to be repositioned when the corresponding subsoiler shank is repositioned, in which the mounting bracket has a standard extending upward and forward of the tool bar; (2) a strut arm with one end pivotally connected to the wheel assembly mounting bracket for pivotal movement about a transverse axis and an opposite end extending forward and downward with respect to the tool bar and overlying the corresponding subsoiler shank; (3) axles affixed to the opposite end of the strut arm and extending laterally outward from opposite sides of the strut arm; and (4) pneumatic wheels mounted to the axles on opposite sides of the strut arm;

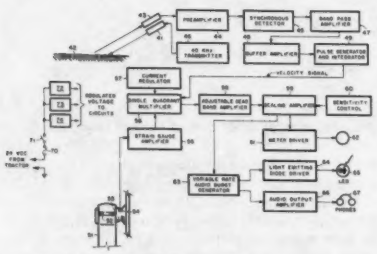
two double acting hydraulic actuating means each affixed to a corresponding wheel assembly standard and operatively connected to a corresponding strut arm for pivoting the respective strut arm about its respective pivot axis to independently pivot the pneumatic wheels downward with the wheels straddling the corresponding shank to pull all the shanks completely out of the soil to enable the implement to be transported and to independently pivot the pneumatic wheels upward to drive the shanks into the subsoil for working the subsoil; and

a hydraulic system operatively connected to the two double acting hydraulic actuating means and having flow divider means for uniformly applying equal amounts of fluid to each actuating means independently of pressure exerted by each actuating means to uniformly pull all of the shanks out of the soil and uniformly drive the shanks into the subsoil.

4,194,574
DRAFT POWER SENSOR AND METHOD FOR IMPROVING PERFORMANCE IN EARTHMOVING EQUIPMENT

Harvey S. Benson, Medina County, and Charles D. Wood, III, Bexar County, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Sep. 13, 1977, Ser. No. 832,724
Int. Cl.[2] E02F *3/76*; A01B *63/112*
U.S. Cl. 172—430 **11 Claims**



1. Apparatus for determining the draft power of earth-moving equipment, said apparatus comprising:

(a) a detecting means to measure the true ground speed of said earthmoving equipment;

(b) detecting means to measure the draft force applied to the soil by said earthmoving equipment;

(c) means for processing information obtained from said detecting means to measure true ground speed and information obtained from said detecting means to measure draft force, to derive a product which is draft power.

7. A method for determining the draft power of earthmoving equipment comprising the steps of

(a) measuring the true ground speed of said earthmoving equipment;

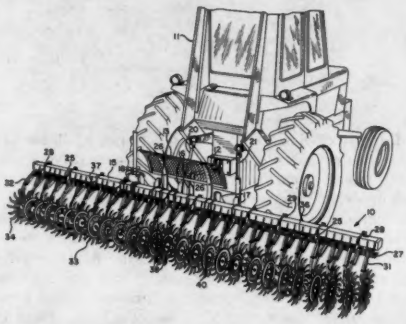
(b) measuring the draft force applied by said earthmoving equipment

(c) processing the measured value of said true ground speed and the value of said draft force to obtain draft power.

4,194,575
MULTIPLE ROTARY HOE AND SUPPORT ARMS

Bernard F. Whalen, Colchester, Ill., assignor to Yetter Manufacturing Company, Colchester, Ill.

Continuation of Ser. No. 859,003, Dec. 9, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,437
Int. Cl.[2] A01B *39/08*
U.S. Cl. 172—551 **11 Claims**



11. A rotary hoe arrangement including a row of hoe wheels with means mounting each hoe wheel independently for individual operative ground contact independently of all other hoe wheels, said means comprising a series of independent operating arms respectively supporting the hoe wheels of said row, each of said hoe wheels being mounted on and supported by an operating arm individual thereto, all of said operating arms being pivotally mounted on pivot shaft means, means mounting said shaft means on said frame member comprising a plurality of laterally spaced pivot bearings secured to said member, spring means individual to each of said operating arms on said pivot shaft means and operating arm to exert pressure on said operating arm individually and which yields to upward movement of the arms whereby each hoe wheel is individually urged into contact with the ground, and stop means on each operating arm which engages said frame member to dispose all of said hoe wheels in the same operative position, said arms and stop means being formed and disposed to locate said hoe wheels in said row and whereby said hoe wheels are adapted to function independently in traversing ground being worked so that each wheel may be deflected about said pivot shaft means without translating this movement to any other wheel.

4,194,576
SHANK AND COULTER MOUNTING CLAMP

Harold J. Graber, Rte. 4, Hutchinson, Kans. 67501

Filed Dec. 12, 1977, Ser. No. 859,312
Int. Cl.[2] A01B *35/20, 39/22*
U.S. Cl. 172—763 **4 Claims**

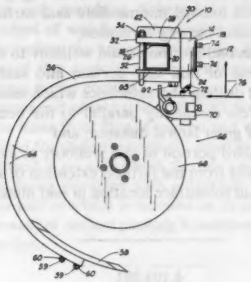
1. A shank and coulter mounting clamp for attaching to an angular shaped plow frame tube and securing a rolling coulter and a rigid shank to the plow frame with the rolling coulter disposed in front of and adjacent the throat of the shank, the clamp comprising;

an inverted "L" shaped bracket, said bracket including

a vertical arm having a front portion, a back portion, a top portion, and a bottom portion, the vertical arm having a vertical coulter shaft aperture therethrough for receiving a coulter shaft of the rolling coulter, the vertical arm further including a vertical shank bolt aperture adjacent the back portion of the vertical arm for receiving a shank bolt attached to the rigid shank; and

a horizontal arm integrally attached to the top portion of the

vertical arm, the horizontal arm having a top portion, a bottom portion, a front portion, and a back portion, the horizontal arm having "U" bolt apertures therethrough for receiving the ends of a "U" bolt; and



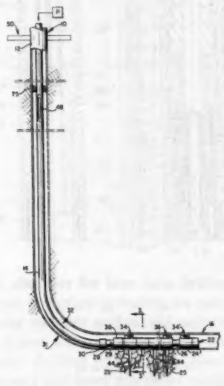
a "V" shaped strengthening web integrally formed in the top portion of the vertical arm and the horizontal arm for providing added strength in the structure of the clamp.

4,194,577

METHOD AND APPARATUS FOR COMPLETING A SLANTED WELLBORE

Roy R. Vann, Artesia, N. Mex., assignor to Peabody Vann, Houston, Tex.

Filed Oct. 17, 1977, Ser. No. 842,565
Int. Cl.² E21B *43/118*
U.S. Cl. 175—4.51 **7 Claims**



1. Method of completing a cased borehole which has a substantially vertical upper marginal end portion and a substantially horizontal lower marginal end portion, comprising the steps of:

(1) arranging shaped charges within a perforating gun such that said charges, when detonated, are directed in a downward direction radially away from the lower half of the gun;

(2) placing an upwardly extending guide means on said gun in opposition to said shaped charges and extending said guide means away from the gun and into close proximity of the inside peripheral wall of the casing, thereby causing the gun to gravitate towards the bottom of the casing;

(3) using a tubing string to run the gun downhole, making the gun freely axially rotatable respective to the tubing by the provision of a swivel means which is interposed between the gun and the lower end portion of the tubing string;

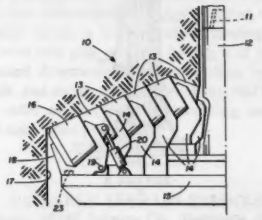
(4) running the gun downhole into the horizontal lower marginal end portion thereof until the gun is at a location adjacent to a hydrocarbon bearing formation to be completed, and firing the gun, thereby forming perforations which extend only generally downward through the casing wall and downward out into the formation.

4,194,578

RAISE BORING HEAD WITH RETRACTABLE GAGE CUTTERS

Howard E. Mitchell, Duncanville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 30, 1978, Ser. No. 910,724
Int. Cl.² E21C *23/00*
U.S. Cl. 175—53 **6 Claims**



1. A raise bit for enlarging a pilot hole into a larger diameter raise hole by being attached to a rotary drill string and rotated and drawn upward by said rotary drill string thereby disintegrating portions of the earth formations surrounding the pilot hole to form a larger diameter raise hole and allowing the portions of the formations to fall freely down the large diameter raise hole, comprising:

a bit body defining a bit axis of rotation, said bit body including a plate positioned perpendicular to said bit axis of rotation, said plate forming the lowermost portion of said bit body;

a drive stem projecting perpendicularly upward from said bit body along said bit axis of rotation, said drive stem including threads to allow said raise bit to be connected to said rotary drill string;

primary cutter means on said bit body located above said plate, said primary cutter means positioned at a first radial distance from said bit axis of rotation for disintegrating the earth formations out to said first radial distance from said bit axis of rotation;

gage cutter means positioned on a moveable support means, said moveable support means located above said plate;

means for allowing said gage cutter means and said moveable support means to be moved relative to said bit body thereby selectively positioning said gage cutter means at a gage cutting position wherein said gage cutter means disintegrates the earth formations out to a radial distance from said bit axis of rotation that is greater than said first radial distance and selectively positioning said gage cutter means within said first radial distance; and

force means for selectively moving said gage cutter means and moveable support means to said gage cutting position wherein gage cutter means disintegrates the earth formations out to a radial distance from said bit axis of rotation that is greater than said first radial distance and selectively positioning said gage cutter means within said first radial distance to allow said raise bit to be lowered back through said larger diameter hole.

4,194,579

DRILLING APPARATUS AND METHOD

Edward A. Bailey, Newport, and James F. Ordway, West Lebanon, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 712,622, Aug. 9, 1976, Pat. No. 4,102,414.
This application May 8, 1978, Ser. No. 904,075
Int. Cl.[2] E21B *17/042, 19/16*
U.S. Cl. 175—57 **22 Claims**

1. In a drilling apparatus including a housing which carries an elongated drive means for powered movement within such housing and which drive means is adapted to receive into engagement therewith a drill rod coupling portion of an elongated drill string for imparting a drilling impetus to such drill string, the improvement comprising:

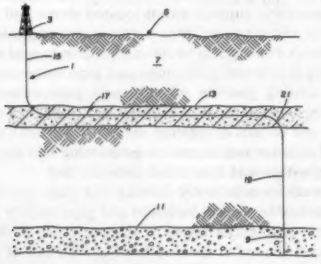
a lock means adapted to be carried by such drilling apparatus for rotatively restraining such a drill rod coupling portion; said lock means including a body member; said body member being stationary with respect to such housing so as to extend adjacent such drive means; restraining means carried by said body member; and said restraining means being selectively operable to secure such coupling portion engaging such drive means against axial rotation with respect to such housing in one rotary direction only.

4,194,580

DRILLING TECHNIQUE

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,794
Int. Cl.[2] E21B *7/04*
U.S. Cl. 175—61 **2 Claims**



1. A method of providing a wellbore that extends into the earth's crust intermediate a surface location and a subsurface location spaced laterally therefrom in a mineral bearing formation, comprising:

(a) forming a first portion of said wellbore to extend essentially vertically from said surface location into said earth's crust and into a formation thereof having good drilling characteristics located intermediate said surface location and said mineral bearing formation;

(b) forming a second portion of said wellbore to extend from the lower end of said first portion into said formation having good drilling characteristics which second portion extends therein essentially parallel to the bedding plane thereof for a great lateral distance; and

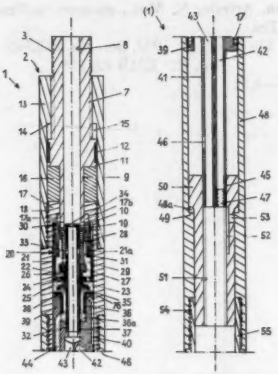
(c) forming a third portion of said wellbore to extend essentially vertically from the farthest extension of said second portion to said subsurface location in said mineral bearing formation.

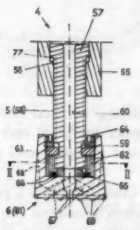
4,194,581

DEEP DRILL HAMMER

Hans P. Walter, Neissestrasse 1, D-3570 Stadt Allendorf 1/BRD, Fed. Rep. of Germany

Continuation of Ser. No. 669,120, Mar. 22, 1976, abandoned.
This application Oct. 25, 1977, Ser. No. 845,099
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1975, 2512785
Int. Cl.[2] E21B *5/00*
U.S. Cl. 175—92 **9 Claims**





9. A down hole percussion drill assembly adapted for connection to a drill string comprising in combination:

(a) an outer tube,

(b) an inner tube located within said outer tube,

(c) a ram positioned between the cylindrical inner wall of said outer tube and the exterior surface of said inner tube, said ram containing a through-hole and being mounted for longitudinal reciprocating movement,

(d) a steel drill member comprising an upper end, a lower end with a bit, and an intermediate shaft portion,

(e) retainer means for connecting the upper end of said steel drill member to the lower end of said outer tube,

said retainer means, steel drill member and bit being provided with matching disharmonic polygonal profiles, the edges of which are rounded at the curvature of an outer radius, the areas therebetween being curved surfaces of flat cycloid section such that the curvature changes at the corners.

the bottom end of said steel drill shaft positively engaging in the inner front face of said bit and wherein said bit is adapted for sliding movement relative to said steel drill shaft and is provided with flexible cushion means,

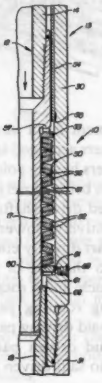
said bit being provided with polygonal insert means, the outer part of which is recessed on its circumference and by means of resilent packing is cushioned in a peripheral direction.

4,194,582

DOUBLE ACTING SHOCK ABSORBERS FOR DRILL STRINGS

Alfred Ostertag, Celle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Jun. 28, 1978, Ser. No. 919,790
Int. Cl.² E21B *17/04*
U.S. Cl. 175—321 **14 Claims**



1. A shock absorber for bore hole drilling strings, comprising a telescopic structure including an outer tubular member, an inner tubular member within said outer member, said members having means for connecting said structure in a drilling string, whereby drilling fluid can be conducted through the drilling string and said inner and outer tubular members, rotary drive means for transmitting torque between said members while said members are moving axially with respect to each other, a single spring means between said outer and inner members, said outer member having longitudinally spaced upper and lower shoulders at opposite ends of said spring means, said inner member having longitudinally spaced upper and lower shoulders at opposite ends of said spring means, the upper shoulder of one member and the lower shoulder of the other member simultaneously engaging and stressing said spring means upon longitudinal contraction of said members with respect to each other, the upper shoulder of the other member and the lower shoulder of said one member simultaneously engaging and stressing said spring means upon extension of said members with respect to each other, said inner and outer members having transverse surfaces responsive to the pressure of the fluid flowing through said members which tends to extend said members relative to each other.

4,194,583

SNOWMOBILE TRACTION LUG AND MOUNTING THEREFOR

Olav Aaen, 1266 N. Sheridan Rd., Kenosha, Wis. 53140

Continuation of Ser. No. 739,725, Nov. 8, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,459
Int. Cl.² B62D *55/24*
U.S. Cl. 180—190 **4 Claims**

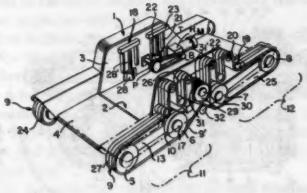
1. A snowmobile comprising; a fixed longitudinally-extending track-supporting rail, a longitudinally-propelled track including laterally-spaced plural bands of flexible material defining a longitudinal gap therebetween, said rail being positioned in said gap, a bar extending transversely across said track and secured to said bands, a transversely-extending traction lug extending across said gap, said lug having a at least one spike portion directed downwardly and extending below said bar and said bands, and securing means securing said lug to said bar on opposite sides of said rail, said securing means disposed upwardly of said spike portion.

4,194,584

VARIABLE TERRAIN VEHICLE

George H. Kress, 10245 Arizona Cir., Bethesda, Md. 20034, and James F. Delany, 1815 Horseback Trail, Vienna, Va. 22180

Filed Jul. 17, 1978, Ser. No. 925,633
Int. Cl.² B62D *55/14, 55/24, 55/30*
U.S. Cl. 180—9.24 R **23 Claims**



1. A vehicle having an undercarriage provided with a track laying assembly on both sides, each said track laying assembly including a front and rear support assembly, an endless belt tread encircling both said front and rear support assemblies of each said track laying assembly, each said support assembly including at least a pair of wheels within the confines of said tread, means connected to at least one said wheel of each said track laying assembly operable to displace said connected wheel toward and away from said wheels of the other said support assembly of the same track laying assembly in order to vary the effective ground engageable wheelbase of said vehicle, and tread take-up means engageable with said tread and operable during said variation of the wheelbase to take up and let out a portion of said endless treads.

4,194,585

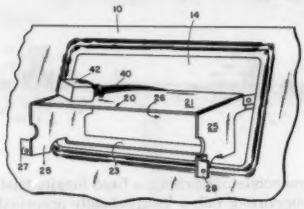
INSTRUMENT MOUNTING SYSTEM

Edgar D. Prince, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jul. 26, 1978, Ser. No. 928,241
Int. Cl.² B60K *37/04*
U.S. Cl. 180—90 **19 Claims**

1. A system for mounting an accessory to a vehicle comprising:

an adaptor housing having a first end shaped to fit over an opening in the vehicle formed by the removal of a vehicle's accessory, and a second end spaced from said first end and having an opening sufficiently large to accommodate the removed vehicle's accessory and an additional accessory to be mounted to the vehicle, said adaptor



housing including a passageway extending between said first and second ends to provide access therebetween;

means for securing said housing to the vehicle with said first end in alignment with the opening; and

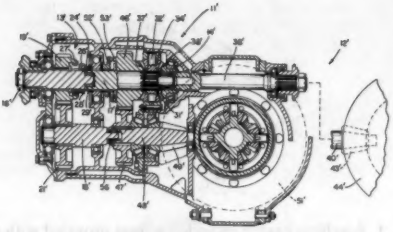
means for securing the vehicle's accessory and an additional accessory to said housing to be accessible from said second end.

4,194,586

GEARED TORQUE SELECTOR

Bradford W. Hicks, Mentor, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 17, 1978, Ser. No. 906,979
Int. Cl.[2] F16H *37/08*; B16K *17/16*
U.S. Cl. 180—24.09 **11 Claims**



1. In a geared drive system for transmitting driving torque to a pair of drive axles, said system including:

a power divider drivingly connected to said pair of drive axles for driving same, said power divider including driving shaft means, first and second output shafts disposed substantially parallel to said driving shaft means and each drivingly connected to a respective one of said drive axles, an axle gear set drivingly connected between said driving shaft means and said first output shaft, and means drivingly connecting said driving shaft means and said second output shaft;

auxiliary transmission means connected to the input end of said power divider for driving same at a different speed ratio, said auxiliary transmission means including an input shaft and a substantially parallel countershaft, said input shaft being coaxially aligned with said driving shaft means, and said countershaft being coaxially aligned with said first output shaft;

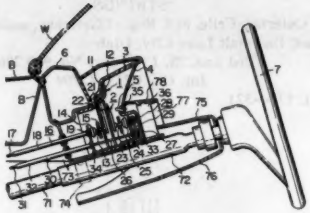
comprising the improvement wherein said auxiliary transmission means includes a single transmission gear set drivingly connectable between said input shaft and said countershaft, and clutch means having a first position of engagement for directly drivingly connecting said input shaft to said driving shaft means for permitting direct driving of said power divider, said clutch means having a second position of engagement which disconnects said input shaft from said driving shaft means and directly drivingly connects said countershaft to said first output shaft for driving said power divider at said different speed ratio.

4,194,587

INDICATOR METERS FOR AUTOMOBILES AND ILLUMINATION THEREFOR

Makoto Shino, Wako; Sadao Makiguchi, Tokyo; Hajime Matsumoto, Kawasaki; Katsusuke Komuro, Chofu; Kazuhiro Iwai, Hidaka, and Yoshikazu Tsuchiya, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1978, Ser. No. 930,556
Claims priority, application Japan, Aug. 5, 1977, 52-105639
Int. Cl.[2] B60K *20/08*
U.S. Cl. 180—90 **6 Claims**



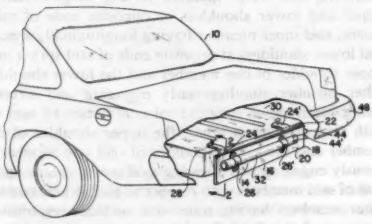
1. A meter arrangement for a motor vehicle, which comprises a plurality of meters arranged in the lengthwise direction of the vehicle, said meters having pointers each rotatable about an axis, said pointer axes being closely positioned to be simultaneously readable, spaced drive shafts connected mediately to drive said meters respectively, power transmission means having a driving rotating part directly connected to the drive shaft connected mediately to the one of said meters closest to a driver of the motor vehicle and a rotating driven part laterally offset from said driving rotating part and operatively connected to be driven by said driving part, and a pointer rotating mechanism between said driven part and said pointer and operatively connected to said driven part and to said pointer, to rotate said pointer.

4,194,588

MOTOR VEHICLE FIRE PREVENTION DEVICE

John F. Wygal; Geraldine Schandoney, and Dorothy L. Straus, all of 5893 Los Molinos, Buena Park, Calif. 90620

Filed Sep. 15, 1978, Ser. No. 942,538
Int. Cl.[2] B60R *21/00*
U.S. Cl. 180—279 **8 Claims**



1. A fire prevention device for motor vehicles having an

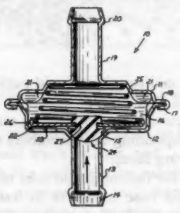
ignition system, a fuel tank, said ignition system including an electrical ground and conductors carrying potential other than ground potential, comprising a hollow cylinder, means for affixing said cylinder adjacent a fuel tank of said motor vehicle, a pair of coil-like conductors, a sheet of shatterable material, said sheet of shatterable material carried within said cylinder, said pair of coil-like conductors carried within said cylinder having said sheet of shatterable material disposed there inbetween, means to electrically connect one of said coil-like conductors to said electrical ground and the other of said coil-like materials to said conductor of said ignition system having a potential other than at said electrical ground whereby said sheet of shatterable material when broken upon impact to said motor vehicle permits said pair of coil-like conductors to electrically engage one another shorting out said ignition system disabling said motor vehicle from further operation.

4,194,589

VALVE

Erwin W. Parr, 3001 McKinley, Des Moines, Iowa 50315

Filed Jun. 12, 1978, Ser. No. 914,542
Int. Cl.[2] B60R *27/00*
U.S. Cl. 180—271 **6 Claims**



1. In combination with an automotive vehicle having a fuel tank and an engine, fuel supply conduit means connected to said tank, a fuel pump driven by said engine and located in said conduit means for pumping fuel from said tank for use by said engine and valve means connected in said fuel line between said fuel pump and said fuel tank dependent upon operation of said pump to open said fuel conduit means, said valve means comprising:

a housing having a sealed chamber therein;

inlet port means connected to said housing and to the fuel tank side of said conduit means;

a circular valve seat disposed in said chamber surrounding said inlet port means;

outlet port means connected to said housing and to the fuel pump side of said conduit means;

a valve assembly disposed within said chamber, said valve assembly comprising:

a plate extending substantially across said chamber, one side of said plate facing said inlet port means and the other side of said plate forming said outlet port means;

an opening having an axis disposed in said plate and resilient means disposed through said opening, said resilient means comprising a first portion extending on the inlet side of said plate, said first portion having a partially spherical surface thereon;

said first portion being larger than said opening;

a second portion, larger than said opening but capable of being resiliently forced through said opening; and

a third portion smaller than said opening connecting the first portion to the second portion for allowing said resilient means to laterally shift its position with respect to the central axis of said opening and thereby facilitate positive sealing of said resilient means against said valve seat when said fuel pump is not in operation; and

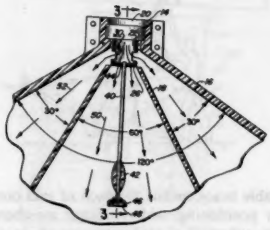
means for biasing said valve member against said valve seat.

4,194,590

LOUDSPEAKER HORN WITH ADJUSTABLE ANGLE OF DISPERSION

C. Roger Anderson, Wilmette, and Robert B. Schulein, Evanston, both of Ill., assignors to Shure Brothers, Incorporated, Evanston, Ill.

Filed Apr. 13, 1979, Ser. No. 29,612
Int. Cl.[2] G10K *11/00*
U.S. Cl. 181—186 **3 Claims**



1. Loudspeaker horn means, including means for adjusting the angles of sound dispersion therefrom, said loudspeaker horn means including a center segment and two outer segments disposed at each side of the center segment, a plurality of walls forming said segments with the wall of the center segment forming one of the walls of the two side segments and independent walls forming the outer sides of the two side segments, said horn including a throat through which sound is directed, said walls forming outer sides said side segments extending to and joining with said throat with the walls of the center segment spaced from the throat, said adjusting means comprising

a valve including an open-ended tube with a pair of openings formed in the sides thereof and connecting the walls of the center segment with said throat,

said valve including means for rotatably supporting the tube and for blocking said openings therein from communication between the throat and the two side segments of the horn when in one position and at the same time providing communication between the throat and the center segment thereof; and providing communication between said throat and all of the segments of the horn when in another position, and

means for rotating the valve to the desired position comprising a rod extending outwardly through the center segment of the horn and connected at its inner end to said tube and to an adjusting knob at its outer end.

4,194,591

MOBILE SCAFFOLD WITH FIXED-USE-POSITION OUTRIGGERS

Robert E. Fisher, Berkeley, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Jul. 17, 1978, Ser. No. 925,174
Int. Cl.[2] E04G *1/34, 1/30, 1/24*
U.S. Cl. 182—17 **19 Claims**

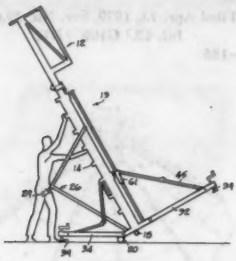
1. A pedestal scaffold comprising:

(a) a base,

(b) first and second caster means mounted on said base, each caster means including at least one ground-engageable caster, there being at least three casters in all, said casters defining therebetween a support area when all of said casters engage the ground,

(c) an elongated ladder unit having a climbing side, said ladder unit being mounted at one end thereof on said base and extending generally vertically upwardly from said base with the center of gravity of said scaffold being vertically within said support area when all of said casters are in engagement with level ground,

(d) at least three elongated outrigger members, each connected at one end therefore to said base and having a ground-engageable element at the other end thereof for engagement with the ground outwardly from said base,



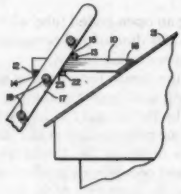
(e) a lockable brace means for each of said outrigger members for positioning said outrigger members relative to said base, when all of said outrigger elements engage the ground and all of said brace means are locked, such that the climbing side of the ladder is vertical and all of said casters are above ground.

4,194,592

LADDER STAND-OFF

Lewis L. Evans, 1408 Durant Ave., North Charleston, S.C. 29406

Filed Feb. 23, 1978, Ser. No. 880,560
Int. Cl.[2] E06C *7/48*
U.S. Cl. 182—214 **2 Claims**



1. A stand-off for a ladder having a pair of stiles connected together by a plurality of rungs which comprises a pair of arms transversely connected by three braces each having a bearing surface substantially parallel to the others, said arms and braces forming an opening therebetween through which the ladder is positioned; two of braces being so arranged that when the ladder is in an upright position and supported at its upper end by the stand-off with the arms in contact with a supporting surface the bearing surfaces of these two braces will bear against opposite sides of the stiles and with the third brace so arranged as to restrict the movement of the stand-off when the ladder is unsupported by the stand-off.

4,194,593

CYCLIC LUBRICANT DISTRIBUTOR VALVE

John P. Snow, Sagamore Hills, and James J. Callahan, Mentor, both of Ohio, assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Sep. 11, 1978, Ser. No. 941,557
Int. Cl.[2] F16N *25/02*
U.S. Cl. 184—7 D **8 Claims**

1. A cyclic lubricant distributor valve comprising

an inlet block unit having a lubricant inlet,

an end block unit,

a plurality of intermediate block units between said inlet and end block units,

each of said intermediate block units comprising a base member and a spool member,

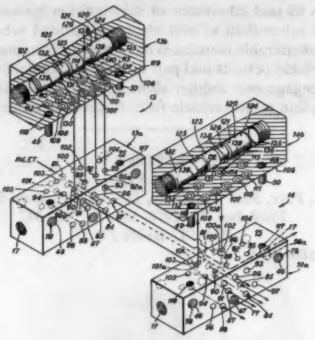
said spool member having a bore and a spool movable in said bore, and said base member having at least one outlet,

said spool member and said base member having cooperating faying faces abutting one another,

means forming hydraulic circuitry in said inlet block unit, said end block unit and said intermediate block units for interconnecting said inlet, said spools and said outlets to provide for cyclic operation of said valve,

said hydraulic circuitry interconnecting said spool members with their corresponding base members only through said cooperating faying faces,

first fastening means for fastening said inlet block unit, said end block unit and said base members in fixed assembly, and second fastening means for fastening each spool member in fixed assembly only to its corresponding base member.

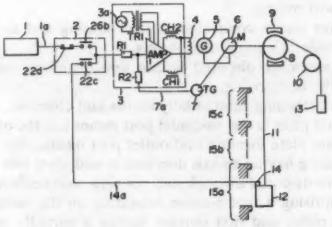


4,194,594

ELEVATOR LANDING CONTROL APPARATUS

Toshiaki Ishii, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1978, Ser. No. 889,113
Claims priority, application Japan, Mar. 31, 1977, 52-36499
Int. Cl.[2] B66B *1/40*
U.S. Cl. 187—29 R **2 Claims**



1. In an elevator system for a building having upper and lower floors, said system including a cage connected to one end of a main rope and a counter-weight connected to the other end of the main rope in a suspended condition for vertical travel in a hoistway, a winding motor which drives a driving sheave on which the main rope is wound so as to produce vertical travel of the cage and the counter-weight, a brake for holding the cage by holding the motor during stopping of the cage, and a landing device which controls the motor to generate an output for forming the torque required for holding the

cage by the motor when the cage is at a stopping floor, an improved elevator landing control apparatus comprising:

a lower floor detecting circuit which detects the presence of the cage at a lower floor and is actuated thereby;

a door open detecting circuit which detects the opening of the door of the cage and is actuated thereby; and

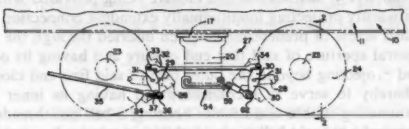
a control circuit which actuates the landing device without the holding of the motor by the brake only when the lower floor detecting circuit and the door open detecting circuit are in the actuated condition.

4,194,595

DEAD LEVER ANCHORING MEANS FOR RAILWAY CAR BRAKE RIGGING

Donald B. Yates, Hueytown, Ala., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jul. 20, 1978, Ser. No. 926,188
Int. Cl.[2] B61H *13/38*
U.S. Cl. 188—52 **7 Claims**



1. In a railway car having a wheeled truck including a truck bolster,

a pair of axles journalled for rotation on longitudinally opposite sides of said truck bolster, and

a pair of wheels for each axle for supporting the same,

a brake rigging arrangement including brake beams positioned on longitudinally opposite sides of said bolster including brake shoe means adapted to engage each of said wheels in braking engagement, first and second brake levers connected to said brake beams, and said brake levers having first, upper ends and second, lower ends,

a connecting rod pivotally connected at its opposite ends to said first end of said first and second brake levers, respectively, and brake actuating means pivotally connected to the second end of said first brake lever, the improvement of an anchoring arrangement for said second brake lever comprising:

bracket means connected to said bolster and positioned generally beneath said connecting rod, and

linkage means pivotally connected to said bracket means and to the second end of said second lever,

said bolster having opening means extending longitudinally of said car therethrough,

said connecting rod extending through said openings means,

said bracket means including longitudinally spaced first and second hanger members secured within said opening means, and

a connecting member extending beneath said bolster and being connected to said hanger members,

said linkage means including a link pivotally connected to said connecting member for relative hinging movement about an axis generally transverse to said car,

said connecting member comprising a rod with a first end and a second end and said first hanger member supporting one end thereof,

said rod having a first clevis at its other end,

said link including a second clevis,

said second hanger member having a connecting and support portion at one end thereof for interconnecting the second hanger member with the rod, and

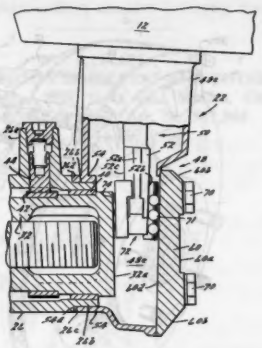
said connecting and support portion having a pivot means hingedly connecting said first and second clevises to provide said relative hinging movement.

4,194,596

DISC BRAKE HOUSING ASSEMBLY

Wayne H. Garrett, Troy, and Richard F. Neuman, Farmington, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 29, 1978, Ser. No. 974,391
Int. Cl.[2] F16D *55/224*
U.S. Cl. 188—72.7 **13 Claims**



1. A housing assembly for use with a vehicular disc brake of the type including a wedge actuator mounted for brake apply and release movement along a line of action generally normal to the wheel axis of the associated vehicle and adapted to be secured at its radially outer end to the piston rod of an associated air motor and defining a wedge portion at its radially inner end presenting inboard and outboard wedge faces, and a push rod assembly slideably mounted for brake apply and release movement along a line of action generally parallel to said axis; said housing assembly including:

A. a first member including a caliper portion adapted to embrace the outer periphery of a disc secured to a wheel of the associated vehicle and including an inboard web portion generally normal to the wheel axis and having an opening extending axially therethrough adapted to receive the outboard end of the push rod assembly;

B. means defining a reaction portion formed of a relatively high weight and high strength material and presenting an annular inboard face generally centered on the line of action of the push rod assembly;

C. a second member formed of a relatively low strength and relatively low weight material secured to said annular inboard face and including a tubular radially extending portion spaced inboard from said inner web portion and adapted to house the wedge actuator with a bearing member in rolling contact with the outboard face of the wedge portion of the actuator and the inboard end face of the push rod assembly;

D. means defining an opening in the inboard face of said radially extending portion opposite the inboard face of the wedge portion of the wedge actuator;

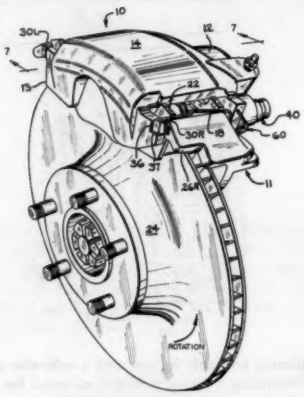
E. an end plate of relatively high strength and relatively high weight material closing said inboard opening and having an outboard face adapted to rotatably engage a bearing member in rolling contact with the inboard face of the wedge portion of the actuator; and

F. a plurality of axially extending elongated fastener members secured at their outboard ends to said reaction portion and at their inboard ends to said end plate and clamping said second housing member between said annular inboard face and the outboard face of said end plate, whereby, upon brake apply movement of the wedge actuator, the push rod assembly is moved axially to effect actuation of brake pads carried by said caliper portion and the braking force generated at the wedge interface between the wedge portion and the push rod assembly is absorbed by tensioning of said fastener members.

4,194,597
DISC BRAKE ANTI-RATTLE MEANS

Anthony C. Evans, Westland, and Karl Goering, Northville, both of Mich., assignors to Kelsey Hayes Co., Romulus, Mich.

Filed Aug. 1, 1978, Ser. No. 928,476
Int. Cl.[2] F16D 65/00
U.S. Cl. 188—73.5 4 Claims



1. A disc brake comprising:

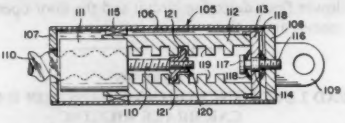
a rotatable disc having an inboard and outboard frictional surface, an inboard and outboard brake shoe assembly each having a friction pad secured to a rigid backing plate, a rigid stationary member having two circumferentially spaced support arms axially extending above and across the periphery of said rotatable disc forming an opening therebetween, said support arms each having an axially extending guide rail for supporting said inboard and outboard backing plate therebetween, said backing plates having coacting anchoring and abutment surfaces slidably engaging said support arm guide rails for restraining said backing plates against both circumferential and radial displacement;

a movable caliper having an inboard leg and an outboard leg straddling said rotatable disc and the respective inboard and outboard brake shoe assemblies, said inboard leg containing therein means for applying an axial force upon said inboard backing plate thereby urging the inboard friction pad into frictional engagement with the rotatable disc and causing axial movement of said caliper whereby said outboard leg engages the outboard backing plate urging said outboard friction pad into frictional engagement with the outboard friction surface of said rotatable disc, said caliper legs joined by an axially extending bridge portion circumferentially disposed between said support arms, anti-rattle means interposed between said backing plates and the support arm guide rails for limiting vibrational freedom of said brake shoe assemblies, said anti-rattle means comprising a wire clip having hook means engaging the under side of said caliper bridge portion, an inboard and outboard axially continuing length from said hook and juxtaposed said support arm guide rail, said inboard and outboard length interposed between the guide rail and said inboard and outboard backing plate respectfully, said hook means spring loading said inboard and outboard lengths by virtue of its engagement of the caliper bridge thereby causing said inboard and outboard lengths to bear against said backing plates urging said backing plates into anti-rattle abutment with said guide rails.

4,194,598
MECHANICAL SHOCK AND SWAY ARRESTOR

Leonard S. Suozzo, 366 Maple Hill Dr., Hackensack, N.J. 07601

Filed Dec. 11, 1978, Ser. No. 967,968
Int. Cl.[2] B60T 7/12
U.S. Cl. 188—134 5 Claims



1. A mechanical shock and sway arrestor adapted to be interposed between piping and a stationary support for said piping and including; a tubular housing having first and second end closures each having inner and outer faces, said first end closure being provided with a central aperture for reception of a ball screw, said second end closure being provided with an outwardly projecting longitudinally extending connection lug; a ball screw of predetermined pitch inserted through the said central aperture of said first end closure and having its outer end projecting beyond the outer face of said first end closure whereby to serve as a connector and having its inner end terminating within said tubular housing; a ball nut threadably engaged over said ball screw within said tubular housing and having one end normally disposed in spaced juxtaposition to the inner face of said first end closure; an axially disposed tubular extension having one end affixed to that end of said ball nut that is away from said first end closure and having its other end terminating in proximity to said second end closure, a cap closing the said other end of said tubular extension and having a central aperture for the reception of a post axle, the inner wall of said tubular extension being provided with female threads of square cross-section and having a pitch the same as that of said ball screw; said cap having inner and outer faces, the outer face being normally disposed in spaced juxtaposition to the inner face of said second end closure; a headed post axle engaged through the said central aperture of said cap and threadably engaged with said second end closure for longitudinal adjustment relative thereto; a pair of disk springs mounted coaxially with respect to said post axle and disposed on opposite faces of said cap, said disk spring being normally effective to maintain the assembly comprising said ball nut, said tubular extension and said cap centered between the inner faces of said first and second end closures; and a centering and supporting element affixed to the said inner end of said ball screw and provided with a thread engaging the internal threads of said tubular extension, the engaging portions of the thread of said centering and supporting element being of convex configuration whereby to provide only line contact with the associated walls of said internal threads.

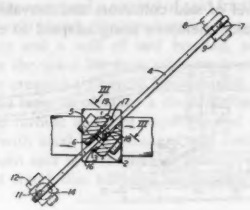
4,194,599
RAILWAY CAR BRAKE BEAM LEVER MOUNTING

Roland E. Cale, Cortland, Ohio, assignor to Schaefer Equipment Incorporated, Warren, Ohio

Filed Jun. 27, 1978, Ser. No. 919,661
Int. Cl.[2] B61H 13/36
U.S. Cl. 188—231 1 Claim

1. The combination with a railway car brake beam provided with a strut having a slot therethrough with parallel side walls inclined a predetermined number of degrees from vertical, of a brake lever extending through said slot and inclined from vertical more than the slot, whereby wedge shape spaces are formed between the lever and the side walls of the slot, a wedge shape member having ends extending in the direction of the lever's length substantially filling each of said spaces, a pivot pin extending through said strut and wedge members and lever for connecting the lever to the strut, and a cross piece at

each end of said wedge members extending across the lever in spaced relation therewith and rigidly connecting the wedge members to each other, the cross pieces being located along a minor length of the ends midway between the upper and lower edges of said side walls and spaced therefrom, one of said



wedge members being provided with means overlapping the top of the adjoining side of the strut in engagement therewith to avoid turning of the wedge members by the lever, and each end of the lever having an opening therethrough for a clevis pin.

4,194,600

HYDRODYNAMIC DOUBLE BRAKE

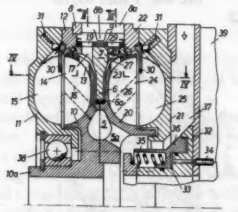
Waldemar Armasow, and Hans Lindenthal, both of Heidenheim, Fed. Rep. of Germany, assignors to Voith Getriebe KG, Heidenheim, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,343

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757240

Int. Cl.[2] F16D 57/02

U.S. Cl. 188—296 **29 Claims**



1. A hydrodynamic double brake, comprising:

a pair of rotor bucket wheels, which are rotatable together in one direction and in the opposite direction;

a pair of stator bucket wheels, with each said stator bucket wheel being associated with a respective said rotor bucket wheel to define two toroidal working chambers, which can be filled with a working fluid;

all said bucket wheels including and supporting respective buckets that extend from the said wheel into the respective said working chambers; said buckets, viewed in cylindrical section through said working chambers, all being set at an angle in the same direction relative to the axis of rotation of said bucket wheels, and in said one rotary direction, the first said working chamber is predominantly active, and in said opposite rotary direction, the second said working chamber is predominantly active;

a common inlet line communicating to both said working chambers;

respective outlet ducts leading out from both said working chambers;

a stationary shell which is stationary with respect to said stator bucket wheels and positioned around said bucket wheels and over said outlet ducts; said shell supporting an outlet valve arrangement for said outlet ducts; said outlet valve arrangement having at least one moving valve element placed and operative to be actuated by the pressure head of the flow of fluid prevailing in its vicinity in said working chambers, such that said outlet ducts from each said working chamber are open when the rotary direction of said brake is such that the respective said working chamber is active and the same said outlet ducts are closed when the rotary direction of said brake is such that the respective said working chamber is largely inactive.

4,194,601

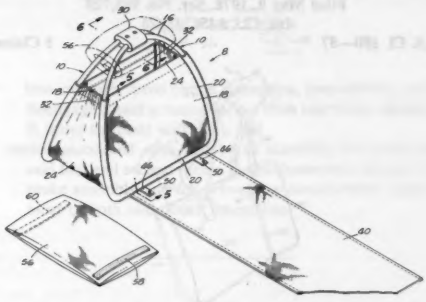
COMBINATION BODY REST AND TOTEBAG

Kathleen F. Yellin, 3627 Serra Rd., Malibu, Calif. 90265

Filed Mar. 20, 1978, Ser. No. 887,944

Int. Cl.[2] A45C 9/00

U.S. Cl. 190—2 **5 Claims**



1. A combination body rest-totebag unit, comprising:

a pair of substantially continuous peripheral frame members, each defining an open area therewithin;

each of said frame members comprising a bottom section, a pair of upstanding side sections extending upwardly from said bottom section and having upper portions, and a top section extending between and connecting the upper portions of said side sections;

a cover panel having a peripheral edge portion secured to said bottom section and parts of said side sections of each of said frame members beneath said upper portions thereof so as to cover a substantial portion of said open area;

a connecting panel extending between and connected to said peripheral edge portions of said cover panels;

said cover panels and said connecting panel defining an open-top container having a compartment for retaining items to be stored and/or carried; said connecting panel including end edge portions which form portions of the upper peripheral edge defining the opening in the top of the container;

hinge means pivotably connecting said top sections of said frame members to one another in a manner to permit movement of said bottom and side sections of said frame members toward and away from one another;

the said connecting panel having a width limiting the distance said bottom sections of said frame members may be moved away from one another;

cooperating tab members connected to said bottom sections of said frame members and provided with detachable fastening elements for detachably connecting said tabs to one another so as to limit the maximum distance the bottom sections of said frame members can be moved away from one another and for providing added support for items in said container compartment when said unit is used as a totebag;

a seat panel having a portion secured to one of said cover panels adjacent said bottom section of its respective frame member; said seat panel being adapted to be retained in a rolled-up condition by said tab members when said tab

members are fastened to one another, and to be unrolled to serve as a ground cover when the unit is used as a body support;

elastic band means connected to said upper ends of said connecting panel to permit expansion of the container opening while minimizing the chance that items in the container will fall out; and

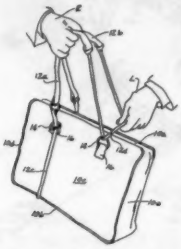
a head cushion member adapted to be wrapped around said hinge member to cushion the user's head when the unit is employed as a body rest; said head cushion having detachable fastening elements for securing said head cushion being adapted to be carried in said container compartment when the unit is employed as a totebag.

4,194,602

CONVERTIBLE BAG ASSEMBLY

Herbert Allen, 3207 Groveland La., Houston, Tex. 77019

Filed May 8, 1978, Ser. No. 903,728
Int. Cl.[2] A45C *13/26*
U.S. Cl. 190—57 **5 Claims**



1. A convertible bag assembly comprising:

a bag body including a top, a bottom, a pair of opposite sides, and a pair of opposite ends, and having retainer means on each of said sides; and

a carrier member comprising a pair of handle segments and a pair of flexible support segments adjoined in alternating end-to-end relation to form a closed loop, said carrier member being freely slidably carried by said bag body by slidable receipt of said support segments in said retainer means for movement of the carrier member between a first position in which said support segments extend from the retainer means on one side of said bag body to the retainer means on the other side of said bag body under the bottom of said bag body to retain said handle means in relatively close proximity to the top of said bag body and a second position in which said support segments extend from the retainer means on one side of said bag body to the retainer means on the other side of said bag body over the top of said bag body whereby said handle means by extended upwardly from said first position, said support segments being movable between said first and second positions by passing respective ones of said support segments over respective ones of said ends of said bag body.

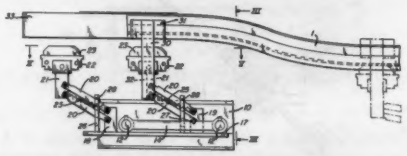
4,194,603

TROLLEY RAIL AND FLYING PICKUP

Donald R. Ross, Jr., 2301 Morton Rd., Pittsburgh, Pa. 15241

Filed Sep. 13, 1978, Ser. No. 941,781
Int. Cl.[2] B60M *1/34*
U.S. Cl. 191—23 A **7 Claims**

1. In combination, a substantially horizontal trolley rail housing provided with a plurality of parallel open bottom slots extending lengthwise of the housing, an electric conductor mounted up in each slot and having a downwardly facing collector-receiving surface, an end portion of said housing being offset upwardly and connected by a downwardly inclined portion to the rest of the housing, and an electrical pickup unit adapted to be carried by a vehicle away from said housing and to be returned to it at said offset end, said unit comprising supporting means, a plurality of collectors mounted on said means for vertical and lateral movement relative thereto, spring means urging the collectors upwardly for engaging said conductors when said unit is beneath said housing, and a pair of laterally spaced guide members extending above the level of said collectors and movable laterally therewith, said guide members being adapted to engage the



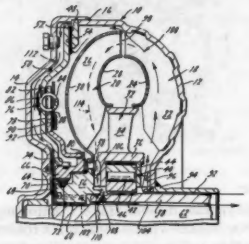
opposite sides of the housing when said unit, separated from the housing, is moved toward said offset end, and the relative positions of said guide members and collectors being such that when the guide members are in engagement with the sides of the housing each collector will be directly below a different one of said slots, whereby when the guide members are moved inwardly along the housing the collectors will enter the portions of said slots in said inclined portion of the housing and engage the conductors.

4,194,604

HYDRODYNAMIC TORQUE CONVERTOR WITH DOUBLE CIRCUIT TORUS FLOW AND LOCK-UP CLUTCH

Robert W. Nichols, Canton, and Stanley L. Pierce, Jr., Walled Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 14, 1977, Ser. No. 850,997
Int. Cl.[2] F16H *45/02*
U.S. Cl. 192—3.3 **2 Claims**



1. A hydrokinetic torque converter mechanism comprising a bladed impeller, a bladed turbine and a bladed stator situated in toroidal fluid flow relationship in a torus circuit, said impeller having an impeller housing enclosing said impeller, said turbine and said stator, a stator sleeve shaft held in a relatively fixed position, an impeller hub sleeve surrounding said stator sleeve shaft and defining therebetween an annular flow passage, a turbine hub joined to said turbine, a turbine shaft secured to said turbine hub and extending through said stator sleeve shaft and defining therewith a second annular flow passage, a lock-up clutch disc located between said turbine and one side of said housing, said housing and said clutch disc each carrying thereon a friction surface, said friction surfaces being arranged in adjacent juxtaposed relationship, a torus circuit fluid flow passage defined in part by said first annular passage and by said second annular passage, said flow circuit including two portions, one portion being defined by the annular space between said friction surfaces and by the space between said clutch disc and said housing and the other portion being de-

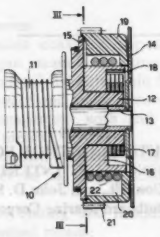
fined by a fluid flow bypass passage between the flow exit section of said turbine and said second annular passage, said bypass passage being defined in part by a one-way flow valve, which permits fluid flow from said torus circuit to said second annular passage but prevents fluid flow in the opposite direction, a first of said friction surfaces being located on the periphery of said housing and a second of said friction surfaces being carried by said clutch disc at a location between the first friction surface and a wall of said housing, an increase in the pressure in the space between said one housing side and said clutch disc creating a pressure force on said clutch disc which engages the same to produce a direct driving connection between said turbine and said impeller, said clutch hub being provided with axial flow passages that establish communication between said second annular passage and the space between said clutch disc and said one housing side.

4,194,605

MOTOR VEHICLE WINDOW REGULATOR

Terenzio Sessa, Via Albani 5, Varese, Italy

Filed Nov. 23, 1977, Ser. No. 854,141
Claims priority, application Italy, Jan. 20, 1977, 19493 A/77
Int. Cl.[2] F16D *7/02, 13/12, 67/02*
U.S. Cl. 192—12 R **4 Claims**



1. A motor vehicle window regulator of the type in which a motor transmits motion to the window via a torque limiting mechanism, said mechanism comprising

a pair of members mounted for coaxial rotation relative to each other, and at least one of said members having thereon a cylindrical surface,

a spiral spring interposed between said members and having preloaded turns frictionally engaged with said cylindrical surface normally to transmit rotation from said one to the other member, and vice versa, and

a ledge on said other member engageable by one of the ends of said spring to deform the spring in opposition to its preloading, so as to withdraw it resiliently from frictional engagement with the cylindrical surface when the torque between said members exceeds a predetermined amount,

said cylindrical surface being the outer surface of a socket rigid with the hub of a winding pulley for the cable of a cable window regulator, and said socket containing a stack of discs for halting the rotation of said pulley in a limiting position in which the window is lowered, and said ledge is rigid with a gear driven by the motor.

4,194,606

LOW INERTIA CLUTCH AND BRAKE SYSTEM HAVING SAFETY OPERATION FEATURES

Jene A. Beneke, McKinney, Tex., assignor to Verson Allsteel Press Company, Dallas, Tex.

Filed Sep. 12, 1977, Ser. No. 832,198
Int. Cl.[2] F16D *67/04, 66/00*
U.S. Cl. 192—18 A **32 Claims**

1. A clutch and brake system comprising:

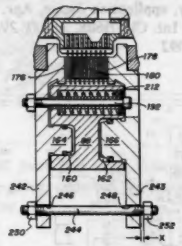
a rotatable shaft,

a low speed clutch assembly mounted about said shaft,

a high speed clutch assembly mounted about said shaft and spaced from said low speed clutch assembly,

a brake assembly disposed between said low and high speed clutch assemblies and including means for normally preventing rotation of said shaft,

first and second means for selectively actuating either of said



low and high speed clutch assemblies, respectively, while disengaging said actuated means from said brake assembly in order to rotate said shaft, and

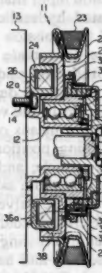
means associated with said brake assembly for permitting said first and second means to simultaneously engage said brake assembly and for preventing simultaneous engagement of both said clutch assemblies.

4,194,607

ELECTRO-MAGNETIC SPRING-WOUND CLUTCH

Toshio Yamaguchi, Matsuyama, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jan. 3, 1978, Ser. No. 866,645
Claims priority, application Japan, Jan. 14, 1977, 52-2553[U]; Mar. 1, 1977, 52-23302[U]
Int. Cl.[2] F16D *13/08, 27/10*
U.S. Cl. 192—84 T **10 Claims**



1. An electromagnetic spring-wound clutch comprising:

a rotary input member;

a rotary output member coaxial with the input member;

a rotary clutch disc coaxial with the input member and frictionally engageable therewith;

a coil-wound spring wound around the input member and being connected at its ends to the clutch disc and output member respectively;

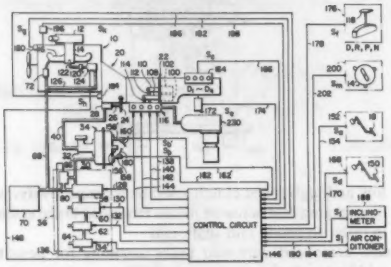
spring means urging the clutch disc to disengage from the input member; and

an electromagnetic coil which, when energized, attracts the clutch disc into frictional engagement with the input member against a force of the spring means.

4,194,608
CONTROLS FOR CLUTCH, MOTOR AND TRANSMISSION

Keizaburo Usui; Isao Hayama, both of Yokohama; Hideo Hamada, Yokosuka, and Sigeaki Yamamuro, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 18, 1977, Ser. No. 788,549
Claims priority, application Japan, Apr. 19, 1976, 51-44866
Int. Cl.[2] B60K *21/00, 29/00*
U.S. Cl. 192—0.092 **3 Claims**

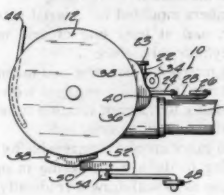


1. In an automatic countershaft power transmission for an automotive vehicle comprising an internal combustion engine including a mixture supply system having a throttle valve to be operated by an accelerator pedal of the vehicle; a countershaft transmission gear assembly including a transmission input shaft, a transmission mainshaft substantially in line with the input shaft, a transmission counershaft substantially parallel with the mainshaft and a plurality of gears on the transmission input shaft, mainshaft and countershaft and arranged to be capable of producing a neutral gear condition, a plurality of forward-drive gear conditions and at least one reverse-drive gear condition; a clutch assembly disposed between the output shaft of the engine and said transmission input shaft and having a fully coupled condition between the engine output shaft and the transmission input shaft and an uncoupled condition disconnecting the transmission input shaft from the engine output shaft; electrically operated hydraulic control system operatively connected to said transmission gear assembly; gearshift control means operative to actuate said hydraulic control system for selectively producing said neutral, forward-drive and reverse-drive gear conditions depending upon predetermined operational parameters of the vehicle; electrically operated throttle-valve actuating means operative to actuate said throttle valve into an idling position independently of the accelerator pedal of the vehicle; and electric throttle valve control means operative to actuate said throttle-valve actuating means to move the throttle valve into an idling position independently of the accelerator pedal, the improvement comprising fluid-operated clutch actuating means operatively connected to said clutch assembly and having a variable volume control chamber for producing the coupled and uncoupled condition in the clutch assembly when the control chamber is expanded and contracted, respectively, electrically operated clutch control valve means connected to said clutch actuating means, and electric valve control means responsive to preselected operational parameters of the vehicle for controlling the clutch control valve means to continuously vary the volume of said control chamber depending upon said preselected operational parameters, said valve control means, said gearshift control means and said throttle-valve control means being cooperative with each other for actuating said clutch control valve means to contract said control chamber in response to a shift being made between any of said gear conditions, moving said throttle valve into the idling position thereof independently of the accelerator pedal when said clutch control valve means is in a condition establishing the uncoupled condition in said clutch assembly, and producing an upshift between said forward-drive gear conditions when said throttle-valve control means is in a condition having said throttle-valve actuating means actuated and said valve control means is in a condition having the clutch control valve means actuated to produce the uncoupled condition in the clutch assembly under conditions in which the vehicle speed is higher than a predetermined level, said clutch control valve means including a vacuum port communicating with a source of vacuum and communicable with said control chamber for causing the control chamber to contract when communication is provided between the control chamber and said vacuum source through said vacuum port, and a plurality of air ports each communicating with the atmosphere and communicable with said control chamber, the individual air ports having different cross sectional areas and being arranged in series with said control chamber, said valve control means being operative to have said air ports selectively and successively brought into communication with said control chamber for allowing atmospheric air into the control chamber at stepwise variable rates and thereby causing the control chamber to expand at stepwise variable rates so that said clutch assembly is operated from the uncoupled condition to the fully coupled condition at stepwise variable rates.

4,194,609
SPEED AND CLUTCH CONTROL FOR ENGINES INCLUDING SHIFT INTERLOCK

Edmund H. DuBois, Zion, Ill., and John D. Sheldon, Charlotte, N.C., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 7, 1977, Ser. No. 849,012
Int. Cl.[2] G05G *9/08*
U.S. Cl. 192—0.096 **4 Claims**

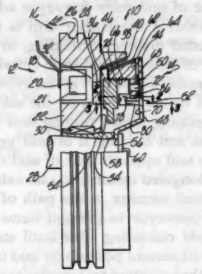


1. A control for the throttle valve and clutch of an engine, said control comprising a timer plate mounted for movement to adjust engine spark and operatively connected to said throttle valve whereby said throttle valve is moved between low speed and high speed settings in response to movement of said timer plate, a shift lever mounted for movement between a neutral position and forward and reverse positions and adapted to actuate the clutch in response to movement of said shift lever, a movable shift interlock connected to said shift lever for movement in response to movement of said shift lever, interengaging means on said timer plate and on said shift interlock for selectively controlling the setting of said throttle valve in accordance to the position of said shift lever and for selectively controlling the position of said shift lever in accordance with the setting of said throttle valve, and detent means independent of said shift lever and including an integral part on said shift interlock for selectively and releasably retaining said shift lever in the neutral, forward and reverse positions.

4,194,610
WEAR COMPENSATED ELECTROMAGNETIC CLUTCH DEVICE

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Oct. 26, 1977, Ser. No. 845,698
Int. Cl.[2] F16D 13/85, 27/10
U.S. Cl. 192—111 A 10 Claims



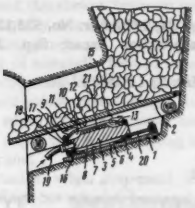
1. An electromagnetic friction device for torque transmission comprising:
torque output means;
torque input means coaxially disposed with said output means, said input means comprising:
a rotatably and axially adjustable friction ring member movable toward and away from said output means for selective engagement with and disengagement from said output means;
an annular armature rotatably connected to said friction ring member so as to be axially moveable relative thereto;
first means for biasing said friction ring member away from said output means;
unidirectional retarder means for allowing rotational motion of said armature relative to said friction ring member in one direction while preventing rotational motion in the opposite direction; and
second means for biasing said friction ring member toward said output means, at least partially counteracting the force of said first means for biasing said friction ring member away from said output means; and
electromagnetic means for selectively producing a magnetic force which moves said friction ring member toward and into engagement with said output means against the force of said first means for biasing said friction ring member away from said output means.

4,194,611
VIBRATOR FOR IMPORTING VIBRATION TO A WORKING PLATFORM

Zhores G. Mukhin; Vladimir N. Vlasov, both of Novosibirsk, and Alexei P. Mikhailov, Karasuk, all of U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Nauk SSSR, Novosibirsk, U.S.S.R.

Filed Nov. 6, 1978, Ser. No. 958,147
Int. Cl.[2] B65G 11/00
U.S. Cl. 193—2 B 18 Claims

1. A vibrator operated by a fluid medium under pressure for the purpose of imparting vibration to a working platform carrying the material being handled, comprising: a base; a forward stroke chamber formed by a continuous seal situated on the side of said vibrator base facing the working platform; a striker mounted on said forward stroke chamber seal and adapted to interact with said working platform under the action of the fluid medium for the purpose of imparting vibration to said working platform; a reverse stroke chamber formed by an additional continuous seal situated on the side of said striker facing said working platform and connected to the source of the fluid medium wherein one of said chambers is

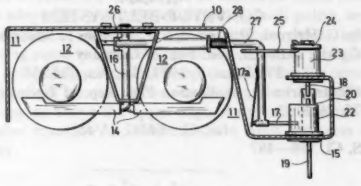


alternately sealed off from the surrounding medium and is connected with the other chamber by means of a passage provided in the striker.

4,194,612
CONTROL MECHANISM FOR A VENDING MACHINE

Allan Ahlström, Mahults Herrgård, Similngsdalen, Sweden (31039)

Filed May 25, 1978, Ser. No. 909,570
Claims priority, application Sweden, May 26, 1977, 7706160
Int. Cl.[2] G07F 7/08
U.S. Cl. 194—4 R 7 Claims

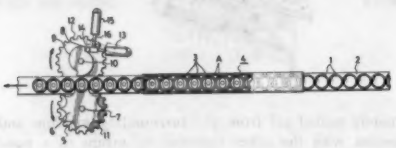


1. In a vending machine having a number of separate components,
a blocking member at each compartment which is rotatable between a blocking position for blocking goods placed therein and an open position wherein the goods can be removed,
linkage means connected to said blocking member for transferring the rotating movement of said blocking member into an axial movement,
an axially moveable pin stamp at the end of each linkage at its end remote from the associated blocking member,
means for mounting pin stamps operable from a number of blocking members in close relationship,
means for locking said linkages,
an opening in said machine, adjacent to said pin stamp mounting means, and formed to permit the introduction therein of a release element for operating said linkage locking means,
a control portion at said release element having transverse bores, in number and position mating with the pin stamps in said pin stamp mounting means, and
an axially displaceable stud in each of said bores, and means for retaining each of said studs in either of two axial positions,
whereby when said blocking means is rotated to said open position, said pin stamp moves axially into its associated bore, thereby axially displacing said stud to provide a visual indication of the purchase of goods.

4,194,613
APPARATUS FOR INTERMITTENTLY TRANSFERRING CONTAINERS

Motoharu Takano, Machida, Japan, assignor to Q.P. Corporation, Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,137
Claims priority, application Japan, Sep. 22, 1977, 52-128122[U]
Int. Cl.[2] B65G 47/26
U.S. Cl. 198—425 2 Claims

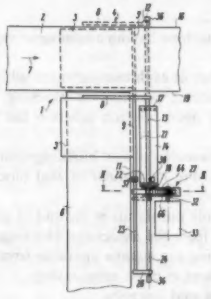


1. An apparatus for intermittently transferring cylindrical plastic containers using a conveyor, which comprises a vessel stopping and transferring wheel which is rotatably disposed on one side of said conveyor, on which cylindrical vessels are placed, and which has in the peripheral portion thereof arc-shaped recesses which are engageable with the side surfaces of said cylindrical vessels; a cam having flat surfaces and operatively connected to said vessel stopping and transferring wheel via toothed wheels; a buffer means having at a free end portion thereof a roller slidingly engageable with the flat surfaces of said cam; and a control means for disengaging said roller from the flat surfaces of said cam.

4,194,614
CONVEYOR-BELT SYSTEM

John G. Hrivnak, Ringwood, N.J., assignor to Sandvik Conveyor GmbH, Feilbach, Fed. Rep. of Germany

Filed Jun. 7, 1977, Ser. No. 804,256
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625755
Int. Cl.[2] B65G 47/46
U.S. Cl. 198—487 1 Claim

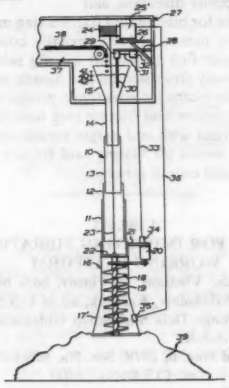


1. In a conveyor system for carrying individual items from a receiving station to a selected destination, the combination of, main conveyor means for carrying items along a straight path from said receiving station downstream through an unloading zone, a discharge conveyor extending from one side of said unloading zone along said main conveyor toward said destination and which is adapted to receive items from said main conveyor, and an item-discharge mechanism comprising a pusher arm, mounting means and operating means, said pusher arm being mounted at one of its ends on said mounting means, said mounting means being mounted for rotational and sliding movement to move said pusher arm between first and second positions on opposite sides of said main conveyor, said mounting means comprising an elongated member extending parallel to said discharge conveyor and having a forward end upon which said pusher arm is mounted, said operating means comprising means for rotating said elongated member to swing said pusher arm through 90° between a horizontal position and a vertical position and also for moving said elongated member longitudinally between an extended position wherein said forward end thereof is at the side of said main conveyor opposite the discharge conveyor wherein the pusher arm is in said first position to a retracted position wherein the forward end thereof is at the side of said main conveyor adjacent the discharge conveyor wherein the pusher arm is in said second position, said elongated member extending, in said extended position, in the path of items on said main conveyor and being remote from said main conveyor in its retracted position whereby the path of travel of items on the main conveyor is unimpeded, said operating means turning said pusher arm to said vertical position and holding it in said vertical position while it is moved to said opposite side of said main conveyor while moving said elongated member to said extended position to place said elongated member in the path of movement of items on said main conveyor to prevent items from moving downstream from said unloading zone until said pusher arm has been returned to its second position on said one side of said main conveyor, and then rotating said pusher arm downwardly to said horizontal position and retracting said elongated member from said opposite side of said main conveyor to said one side of the conveyor to return the pusher arm to its second position and move an item from said main conveyor to said discharge conveyor.

4,194,615
APPARATUS FOR UNLOADING LOOSE PARTICULATE SOLID MATERIAL

Karl G. Tell, Helsingborg; Arne E. Wall, Landskrona, and Olle L. Siwersson, Helsingborg, all of Sweden, assignors to AB Scaniainventor, Helsingborg, Sweden

Continuation-in-part of Ser. No. 749,991, Dec. 13, 1976, abandoned. This application Aug. 25, 1978, Ser. No. 936,953
Claims priority, application Sweden, Dec. 17, 1975, 7514248
Int. Cl.[2] B65G 43/08, 47/19
U.S. Cl. 198—502 10 Claims



1. An apparatus for unloading loose particulate solid material by positive discharge into a pile in a manner to diminish dust formation problems comprising

a substantially vertically directed discharge pipe having an outlet end,

a positioning means for varying the position of said outlet according to pressure in said discharge pipe in the vertical or lateral senses, including a drive motor for raising, lowering or laterally displacing said outlet end,

a positive discharge means arranged at said outlet end of said discharge pipe for forcing the discharge of the material through said outlet end under pressure into the pile and having a motor connected for driving said positive discharge means,

and a pressure sensing means to sense the pressure of the material at said outlet end and to regulate said drive motor of said positioning means in dependence on said pressure.

4,194,616

HELICAL CONVEYORS

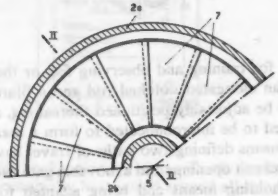
Louis Barthelemy, Residence Longchamp, Villier le Mehieu, 78770 Thoiry, and Roger S. Barbedienne, Rue de Neuville, 95610 Eragny-sur-Oise, both of France

Filed Mar. 10, 1978, Ser. No. 885,185

Claims priority, application France, Mar. 11, 1977, 77 08095

Int. Cl.[2] B65G *17/12, 21/18*

U.S. Cl. 198—778 **3 Claims**



1. A conveyor-elevator system comprising:

an upright structure having a pair of walls;

a helical track disposed in said structure and formed with a pair of rails fixed to said walls;

an endless conveyor rolling on said track, said conveyor comprising:

a succession of closely juxtaposed platforms of trapezoidal configuration having converging edges lying along radii of a helix formed by said track,

a pair of rollers journaled to said platform and engaging one of said tracks along a broad side of each platform, and a further roller journaled on each platform and engaging the other track along the narrow side of each platform, and

a flexible belt yieldably interconnecting said platforms centrally and extending over the length of the conveyor, said belt being toothed along its side turned away from said platforms, said belt being disposed along the undersides of said platforms; and

a plurality of drive units in said structure spaced along said conveyor and each including:

a cog wheel engaging the teeth of said belt, and

motor means connected to said cog wheel for driving same, each of said motor means including a speed reducer.

4,194,617

NAIL POLISH KIT

Ira Bandell, Cranford, N.J., assignor to Cosmetic Arts, Inc., Clark, N.J.

Filed May 8, 1975, Ser. No. 575,986

Int. Cl.[2] B65D *5/50, 5/48*

U.S. Cl. 206—45 **4 Claims**

1. A unitary, integrally formed tray for a nail polish kit comprising:

(a) a front panel, a parallel rear panel, and a bottom panel joining same,

(b) a central wall disposed between said front and rear panels and parallel thereto,

(c) a first horizontally extending panel joining said front panel to said central wall,

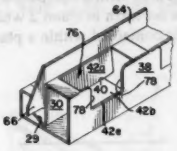
(d) a second horizontally extending panel joining said rear panel to said central wall,

(e) a plurality of flaps defined in said first horizontally extending panel and temporarily covering a plurality of wells defined therebelow between said bottom panel, and first horizontally extending panel, and said central wall and said front panel.

(f) a plurality of integrally formed actuators defined in said second horizontally extending panel and said rear panel,

(g) each of said actuators including a strut that is freed along its lateral edges from the second horizontally extending panel and a seat that is freed along its lateral edges from said rear panel,

(h) each actuator, when depressed in the vicinity of the corner defined between said second horizontally extending panel and said rear panel, flexing inwardly in a toggle-like fashion so that said strut reinforces said central wall and said seat is positioned in a horizontal plane spaced above, and parallel to, the bottom panel of the tray, and



(i) the seats defined in said rear panel being larger than the wells defined beneath said first panel, each seat being adapted to receive a large bottle of nail dress while each well is adapted to receive a small bottle of nail polish, and

(j) the elevation of each seat above said bottom panel of the tray being equal to the difference in the respective heights of the nail polish and nail dress bottles whereby the upper ends of all of the bottles reside in the same horizontal plane spaced above the upper edge of the erected central wall after insertion into the respective wells and seats of the tray.

4,194,618

POLYURETHANE ADHESIVE COMPOSITION AND USE THEREOF

John F. Malloy, Albany, N.Y., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 755,959, Jan. 3, 1977, Pat. No. 4,144,219, which is a division of Ser. No. 695,381, Jun. 14, 1976, Pat. No. 4,027,435, which is a continuation-in-part of Ser. No. 630,653, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 369,482, Jun. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 253,570, May 15, 1972, Pat. No. 3,872,629, which is a continuation-in-part of Ser. No. 34,105, May 4, 1970, abandoned, and a continuation-in-part of Ser. No. 233,572, Mar. 10, 1972, Pat. No. 3,763,604, which is a continuation-in-part of Ser. No. 103,148, Dec. 31, 1970, abandoned, and a continuation-in-part of Ser. No. 822,934, May 8, 1969, abandoned. This application Oct. 5, 1978, Ser. No. 948,975

Int. Cl.[2] B65D *81/24;* **B24D** *11/06;* **B32B** *27/12;* **C08K** *5/02*

U.S. Cl. 206—205 **4 Claims**

1. An assembly for laminating various lamina together comprising an adhesive film and laminated thereto a woven rein-

forcing fabric wherein said adhesive film comprises the reaction product of:

(a) a hydroxy terminated polyurethane-polyester having a hydroxyl number of from about 2 to about 15;

(b) an active hydrogen component containing at least difunctional active hydrogen and having an active hydrogen equivalent weight in the range of from 27 to less than about 500;

(c) a component having available free isocyanate groups; and

(d) a component selected from the group consisting of chlorinated aliphatic hydrocarbon, chlorinated aromatic hydrocarbon, alkylated polystyrene, and mixtures thereof, said component being miscible with components (a), (b) and (c).

2. An assembly as set forth in claim 1 wherein said reinforcing fabric is impregnated with a compatible adhesive material.

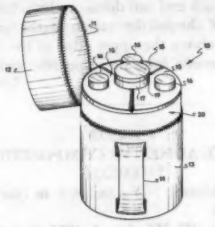
4. As assembly as set forth in claim 2 wherein said assembly is in roll form and is contained within a plastic bag containing a desiccant.

4,194,619

MULTIPLE FLUID STORAGE CONTAINER

Kenneth E. Schley, 2481 Northland St., Cuyahoga Falls, Ohio 44221

Filed Oct. 2, 1978, Ser. No. 947,485
Int. Cl.[2] B65D *77/04, 85/62*
U.S. Cl. 206—217 **7 Claims**



1. A multiple flask apparatus for fluid storage comprising:

at least three storage decanters, a multiplicity of measuring jiggers, and an enclosing protective cover;

each said decanter having a length having upper and lower fractions, an interior junction, and interior surfaces, said interior surfaces of the several said decanters assembled contiguously, said interior junctions of the several said decanters assembled contiguously at said lower fraction of said length, and said decanters contained within restrained by said protective cover during storage;

each said interior surface having an indented area in said upper fraction of said length, said contiguous containment and restraint of said interior surfaces forming a recessed area in said indented area wherein said multiplicity of jiggers may reside during storage;

each said jigger having a protective cap and means for vertical, releasable storage of each said jigger from other said jiggers;

each said decanter having a fluid dispensing orifice apparatus; and

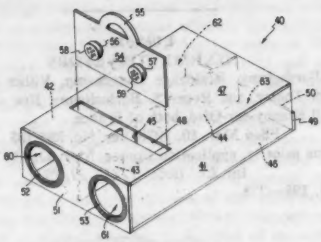
said protective cover having latching means and a handle apparatus.

4,194,620

TROPICAL FISH TRAINING KIT

Natalie Soloway, 15200 Rayneta Dr., Sherman Oaks, Calif. 91403

Filed Dec. 29, 1977, Ser. No. 865,575
Int. Cl.[2] B65D *85/50;* **A01K** *63/00*
U.S. Cl. 206—223 **3 Claims**



1. A kit for training and observing fish or the like, the kit including an elongated notched rod and a plurality of rings adapted to be adjustably positioned therealong, a plurality of tubs adapted to be interconnected to form a maze, a housing including means defining two paths of travel having opposite entrance and exit openings and a movable gate carrying fish or like food holding means and being adapted for movement between open and closed positions, and a sheet having means setting off a plurality of individual areas with fish or like food holding means within each area.

4,194,621

STRIP OF JOINED FASTENING ELEMENTS AND METHOD FOR ITS MANUFACTURE

Wilfried Lange, Brockhold, Fed. Rep. of Germany, assignor to Fa. Dieter Haubold Industrielle Nagelgerate, Hemmingen-Westerfeld, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,451
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748952
Int. Cl.[2] B65D *85/24*
U.S. Cl. 206—343 **6 Claims**

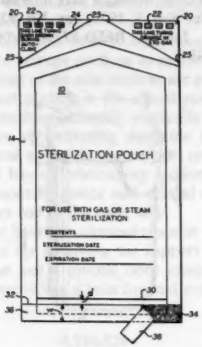
1. A strip of joined fastening elements for use in a fastener-driving machine comprising:

a multiplicity of interconnected fastening elements, each of which has a head at one end thereof, and a shank at the opposite end thereof, said shanks being substantially parallel to one another and said heads each having at least one protuberance formed thereon which is resistance welded to the head of an adjacent fastening element to form a spot weld connection and so as to achieve a stepped, overlapping relationship of said strip of fastening elements for permitting loading in a fastener-driving machine.

4,194,622
STERILIZABLE PACKAGE AND A METHOD OF PACKAGING FOR STERILIZATION

Robert P. Lewis, Oceanport, N.J., assignor to Faser Industries, Saddle Brook, N.J.

Filed Jul. 3, 1978, Ser. No. 921,534
Int. Cl.[2] B65D *33/20*
U.S. Cl. 206—363 13 Claims

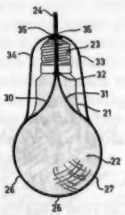


1. A sterilizable package comprising a plastic member and a paper member marginally heat-sealed around all sides thereof; means defining a slit in the paper member extending between two side seals and adjacent to and spaced apart from another side seal for receiving the package contents; and means disposed on said paper member between the slit and the edge of said another side seal for closing the slit in response to a single fold of the package around a bending line between the slit and the edge of said another side seal of the package, said means being positioned such that upon making the single fold, said means is aligned over said slit.

4,194,623
PACKAGED ELECTRIC LAMP

Franciscus M. Klomp, and Marinus Overmars, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,989
Claims priority, application Netherlands, Sep. 7, 1977, 7709817
Int. Cl.[2] B65D *85/42*
U.S. Cl. 206—418 2 Claims

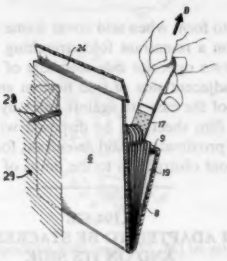


1. An electric lamp package, which comprises a lamp envelope having a neck adjoining at one end a convex portion and connected at the other end to a lamp cap; an elongate packaging strip extending at one end from beyond the lamp cap and bent around the convex portion of the lamp envelope and extending at its other end back beyond the lamp cap to form two oppositely disposed long sides, said two extending ends engaging each other substantially flatly; a pair of lengthwise incisions in each long side to provide a packaging strip central portion in contact with the abutting convex portion of the lamp envelope and two packaging strip edge portions extending along said central portion and being in opposite lateral edge-wise contact with the lamp envelope, the central portion of each long side extending from the bottom of the lamp cap to an area on the lamp envelope convex portion between the lamp envelope neck and the greatest cross section of said convex portion; and means to secure together the corresponding edge portions of the two oppositely disposed long sides.

4,194,624
LOCKABLE HOLDER FOR A MULTIPLE PLASTER PACK

Hans Spiegelberg, Taby, Sweden, assignor to Salve S.A., Geneva, Switzerland

Filed Oct. 20, 1978, Ser. No. 952,830
Claims priority, application Sweden, Apr. 10, 1978, 7803977
Int. Cl.[2] A61F *13/02;* A61L *15/06*
U.S. Cl. 206—441 16 Claims



1. A storage receptable for a separable pack having at least a front wall behind which multiple adhesive bandages are located comprising: front and rear walls joined together at the lower regions thereof and defining a trough-shaped compartment therebetween; a flange element extending inwardly from said front wall a sufficient distance so as to overlie at least the front wall of the adhesive bandage-containing pack stored in said compartment so as to prevent removal of the pack from the compartment but permit removal of individual bandages; and a plurality of apertures extending through the front wall of said compartment below said flange element whereby a key member can be inserted through said apertures for engagement with the front wall of a pack in the compartment to shift such front wall from beneath the flange element to permit removal of the pack.

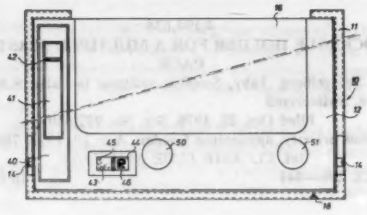
4,194,625
RADIOGRAPHIC FILM CASSETTE

Emile F. Stievenart, Hoboken; Hendrik S. Plessers, Boechout, and Georges J. Neujens, Merksem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 808,174, Jun. 20, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,399
Claims priority, application United Kingdom, Jun. 22, 1976, 25949/76
Int. Cl.[2] B65D *81/30;* H05G *1/28;* G03B *41/16*
U.S. Cl. 206—455 18 Claims

1. A radiographic film cassette comprising a bottom, a cover frame which is U-shape in plan, having three side members with the remaining side being devoide of a side member between the free ends of the two opposite side members, and defines an open area therewithin, hinge means hingedly connecting the free ends of said two opposite frame side members to said bottom, fastening means for securing said cover frame in closed position to said bottom, said U-shaped cover frame making with said bottom when in closed position a light-tight seal around its three side members, and a light-opaque radia-

tion-penetrable flexible foil arranged in said cover frame at least coextensive with the open area thereof and having margins along three sides secured between said bottom and said cover frame side members when the latter are in closed position, said flexible foil on its remaining side projecting outside said open space beyond the limits of the free ends of said cover frame side members and extending continuously onto said



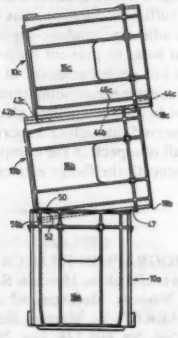
bottom so as to form when said cover frame and bottom are in closed position a re-entrant fold stretching between the free ends of said two opposite side members of said cover proximate to the adjacent side of said bottom and closing the remaining side of the cassette against entry by light, whereby a radiographic film sheet can be disposed within said cassette with an edge proximate to said re-entrant fold in said foil and exposed without obstruction to the limits of said folded foil.

4,194,626

CONTAINER ADAPTED TO BE STACKED VERTICALLY AND ON ITS SIDE

Peter K. Boller, Willowdale, Canada, assignor to Consumers Glass Company Limited, Toronto, Canada

Filed Jun. 6, 1977, Ser. No. 804,014
Int. Cl.[2] B65D *21/02*
U.S. Cl. 206—509 **29 Claims**



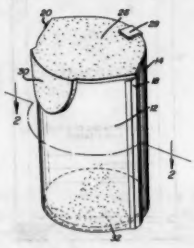
1. A container adapted to be stacked in a stepped manner with its side resting on a side of a like underlying container where said container is inclined relative to horizontal when stacked, said container comprising opposing side walls and interconnected opposing end walls, an interconnected bottom and an open top defined by a top rim of said container, the height of said container being at least equal to the width of the container end wall, each of the container side walls having side stacking engagement means for engaging a like underlying container to prevent said container from sliding down relative to such inclined underlying container, said side stacking engagement means comprising a lug projecting from each container side wall and so positioned to ensure side stacking of such containers in a stepped manner where the lugs of opposing side stacked container side walls abut to provide overlap of container sides of greater than 60%.

4,194,627

COLLAPSIBLE AND REUSABLE CONTAINER INSULATOR

Robert F. Christensen, Miles City, Mont., assignor to Shirley I. Gibson, Miles City, Mont., a part interest

Filed Sep. 5, 1978, Ser. No. 939,118
Int. Cl.[2] B65D *81/36, 7/00*
U.S. Cl. 206—545 **7 Claims**



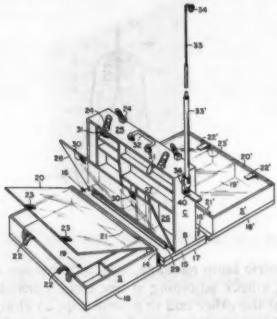
1. An insulator for a cylindrical can adapted for holding liquid contents, the insulator comprising thermal insulating means removably enclosingly surrounding the cylindrical can, said insulating means having opening means for exteriorly gaining access to the cylindrical can, the thermal insulating means comprising a pair of joined collapsible side walls formable into a cylindrical sleeve, an insulating bottom, and a removable insulating top lid which comprises said opening means, the insulating bottom being fittingly receivable into the cylindrical sleeve and the insulating top lid being attachable to the opposite end of the cylindrical sleeve, whereby said liquid contents are maintainable at a temperature above or below ambient temperatures, and whereby damage to a surface on which the container rests is preventable.

4,194,628

MEDICAL CASE

Juan M. Campos, 804 S. Main St., McAllen, Tex. 78501

Filed Sep. 18, 1978, Ser. No. 943,321
Int. Cl.[2] A45C *11/00*; A61B *19/00*
U.S. Cl. 206—570 **1 Claim**



1. A medical case for storage of medical supplies and for administering medical treatment to a patient, comprising:

a central section having a vertically extending storage portion;

said central section having a base support portion extending

past each side of the central section to provide an enlarged support to stabilize the central section;

side sections having storage portions secured to each side of the base support portion by hinge means to provide a substantially rectangular case in their upright closed position and with the outer portions of the side sections forming a continuous support portion with the base support portion in the open, substantially horizontal, positions;

the side sections including extensions hingedly connected to the base support portion;

the central section and side sections having transparent covers over the storage portions to retain articles therein;

the storage portions of the side sections are positioned above the base support portion in the closed position;

a suport rod extending generally vertically above the case during use for administering medicine to a patient by hanging medical means on the support rod;

the support rod having telescoping sections and pivotally mounted horizontally inside said central section for storing the support rod in the case; and

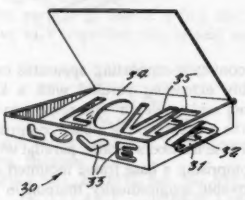
the medical case having a channel open at one side of said central section for receiving the support rod for storage inside the case and a pivotal door closing said channel opening and providing a base for said rod when in use.

4,194,629

LOVE BOX

Dale A. Ledman, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Mar. 17, 1978, Ser. No. 887,860
Int. Cl.[2] B65D *73/00*
U.S. Cl. 206—573 **1 Claim**



1. A box for displaying a love message when closed or open, comprising a case having a bottom with an encompassing wall in combination with a cover pivoted at one end to said wall whereby said cover may be moved from a closed position abutting said wall to an open position providing access to said case, in combination with a love message and associated means for displaying said message in both closed and open positions, wherein said means comprise a flourescent substance deposited on the case bottom and including a card mounted in said case spaced from said material, said card having cut-out portions in the form of said message for display when the box is open and further cut-outs through said wall in the form of said message.

4,194,630

PAPERBOARD CORNER PROTECTIVE DEVICE

Thomas J. Kaiser, St. Cloud, Minn., assignor to Champion International Corporation, Stamford, Conn.

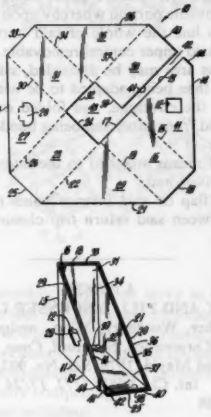
Filed Dec. 26, 1978, Ser. No. 972,654
Int. Cl.[2] B65D *81/14, 85/48*
U.S. Cl. 206—586 **14 Claims**

1. A blank which may be erected and removably fastened to form a paperboard device to fit upon and protect the corners of packaged articles, said blank comprising, as panels of a unitary one-piece blank;

(a) first, second, third and fourth triangular panels (**11, 20, 27, 35**) each having an outside free edge (**14, 21, 29, 36**) and said first triangular panel having a second free edge (**13**);

(b) first, second, third and fourth rectangular panels (**16, 23, 31, 38**) each having an inside free edge (**17, 24, 32, 39**) and an outside free edge (**18, 25, 33, 40**), said inside free edges forming a central opening of said blank;

(c) said first rectangular panel (**16**) being joined by respective fold lines (**15, 19**) to said first and second triangular panels (**11, 20**), said second rectangular panel (**23**) being



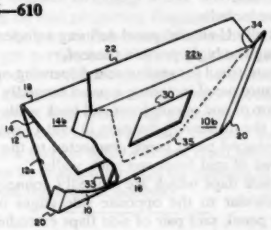
joined by respective fold lines (**22, 26**) to said second and third triangular panels (**20,27**), said third rectangular panel (**31**) being joined by respective fold lines (**30, 34**) to said third and fourth triangular panels (**27, 35**); said fourth rectangular panel (**38**) being joined to said fourth triangular panel (**35**) by a fold line (**34**); said fourth rectangular panel (**38**) having a free edge (**41**) which forms a gap (**42**) with said second free edge (**13**) of said first triangular panel (**11**).

4,194,631

MACHINE SORTABLE MAILING ENVELOPE

Karur S. Rangan, 36 Aberfeldy Crescent, Thornhill, Ontario, Canada

Filed Oct. 6, 1978, Ser. No. 949,073
Int. Cl.[2] B65D *27/06, 27/34*
U.S. Cl. 206—610 **7 Claims**



1. A machine sortable mailing envelope of the type adapted to be used twice, once on an outward trip, and once on a return trip and adapted for easy machine handling and sorting on both trips, said envelope comprising;

a front panel having an address area for carrying an address;

a back panel;

means joining said front and back panels along their bottom and side edges;

an outward trip closure panel joined to the upper edge of said front panel and adapted to be folded over the upper edge of said back panel and having bonding means;

a return trip closure panel joined to the upper edge of said back panel and folded within the envelope between the back and front panels and having bonding means;

a perforation line extending down either side of said front panel in a generally D-shaped pattern around the address area, defining an upper detachable portion which is removable from the remainder of said front panel, said perforation line being spaced inwardly from the side edges of said front panel to leave marginal strips of said front panel therealong along the bottom and both side edges, said outward trip closure panel being attached to said upper removable portion whereby upon tearing along said perforation line the whole of said outward trip closure panel and said upper central removable portion including said address area may be discarded, said return trip closure panel then being adapted to be withdrawn from the interior of the envelope, and folded over said marginal strips of said front panel and being bonded thereto for the return trip;

interior panel means attached to the interior of said upper central portion, and,

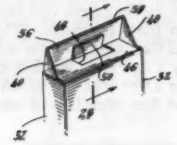
an extension flap on said interior panel means folded upwardly between said return trip closure panel and said back panel.

4,194,632

CANDY AND PILL DISPENSER CARTON

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed May 4, 1978, Ser. No. 902,802
Int. Cl.[2] B65D *5/72, 17/24*
U.S. Cl. 206—626 **3 Claims**



1. A dispensing carton comprising:

a front wall, a back wall, and side walls connecting opposite edges of said front and back walls;

a bottom wall between said front and back walls and said side walls; and

a top closure including,

a substantially U-shaped panel defining a dispensing opening along the bight portion thereof,

a top closure panel for sealing said dispensing opening, the top closure panel including a panel hingedly connected to the top of one of said front and back walls adapted to overlie the dispensing opening in said U-shaped panel, said U-shaped panel being connected to the top of the other one of said front and back walls,

a pair of side flaps which are hingedly connected to and perpendicular to the opposite side edges of said top closure panel, said pair of side flaps extending into the interior of said carton, with each side flap having an edge of a dimension to abut one of said front and back walls upon rotation of said top closure panel to limit rotational movement of said top closure panel, and

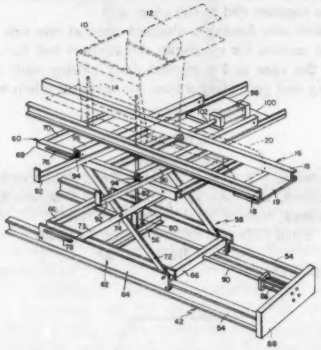
a tab adhesively connected to said top closure panel, said tab being connected by a cut and perforated line to the bight portion of said U-shaped panel within and coplanar to said dispensing opening whereby initial rotation of said top closure panel will break the perforated portion to said cut and perforated line to unseal said dispensing opening, with the side flaps forming with said top closure panel a bin to catch articles dispensed through said dispensing opening, and whereby, upon rotation of said top closure panel to the closed position, said tab is inserted within the interior of said carton through said dispensing opening in order to lock said top closure panel in sealing engagement with the U-shaped panel.

4,194,633

ADJUSTABLE CONVEYOR

Malcolm M. Paterson, Lee, N.H.; William J. Paxson, and Charles W. Christensen, both of Cedar Rapids, Iowa, assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 832,719, Sep. 12, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 936,412
Int. Cl.[2] B07B *4/06*
U.S. Cl. 209—152 **12 Claims**



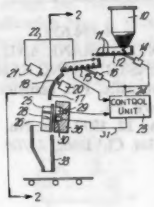
1. Adjustable conveyor-supporting apparatus comprising a conveyor operably extending parallel with a known axis, means for adjusting said conveyor with respect to said known axis, comprising the combination of a base comprised of a pair of spaced parallel base members located parallal with said axis, a first support comprising a base frame mounted on the base members and movable longitudinally thereon in a direction parallel to said axis, a second support comprising a pair of spaced parallel lateral rails mounted on said base frame and extending laterally in a direction perpendicular to said axis, said lateral rails being movable vertically with respect to said axis independent of said first support, and conveyor support means mounted on said lateral rails and movable thereon in a direction transverse to said axis, said conveyor being mounted on said conveyor support means and movable therewith and extending in a direction parallel to said axis.

7. In a rotary drum classifier system, adjustable conveyor-supporting apparatus comprising a conveyor operably extending parallel with a known longitudinally axis of a rotary drum, means for adjusting said conveyor with respect to said axis comprising the combination of a base comprised of a pair of spaced parallel base members extending in a direction parallel to said axis, a first support comprising a base frame mounted on the base members and movable longitudinally thereon in a direction parallel to said axis, a second support comprising a pair of spaced parallel lateral rails mounted on said base frame and extending laterally in a direction perpendicular to said axis, said lateral rails being movable vertically with respect to said axis independent of said first support, and conveyor support means mounted on said lateral rails and movable thereon in a direction transverse to said axis, said conveyor being mounted on said support means and extending in a direction parallel to said axis and movable with said support means toward and away from one end of said drum.

4,194,634
METHOD AND APPARATUS FOR SORTING RADIOACTIVE MATERIAL

Leonard Kelly, 3 Oakwood Rd., Peterborough, Ontario, Canada (K9J 1N2)

Filed Dec. 9, 1977, Ser. No. 859,195
Int. Cl.[2] B07C 5/346
U.S. Cl. 209—589 15 Claims



1. A method of sorting particles of radioactive material comprising the steps of

moving a particle to be sorted into a predetermined position adjacent a radiation detector,

temporarily retaining said particle in said position,

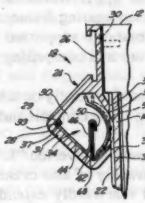
comparing a first signal representing rate of radiation provided by said readiation detector with values representing a cut-off rate of radiation and providing a second signal when said first signal exceeds said values by a first predetermined amount and a third signal when said first signal is less than said values by a second predetermined amount, the step of comparing lasting only until one of said second or third signals is provided, and

moving said particle in one of a first and a second path responsive to a respective one of said second and third signals.

4,194,635
X-RAY FILM GRIP

Peter T. Ferrara, Valley Cottage, N.Y., assignor to AGFA-Gevaert, Antwerp, Belgium

Filed Nov. 21, 1977, Ser. No. 853,311
Int. Cl.[2] A47F 7/16; B42F 1/00
U.S. Cl. 211—45 14 Claims

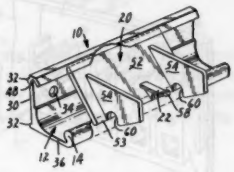


1. A sheet support member adapted to cooperate with a sheet support surface, comprising an elongated hollow frame element having a longitudinally extending slot formed therein facing said sheet support surface; an elongated spring element mounted in said frame having a plurality of separate spring fingers thereon, said spring fingers having bent central portions thereof positioned adjacent to and normally projecting from said slot towards said sheet support surface, said spring element having an elongated backing strip and said fingers being integrally formed therewith, said fingers being generally arcuately curved and extending transversely of said backing strip, said fingers each having one end integral with said backing strip and an opposite free end with said central bent portion therebetween; and means slidably positioned within the frame for mounting said spring element on said frame whereby a sheet positioned between said frame and said support surface will be engaged by said bent portions of the spring fingers and held against said support surface.

4,194,636
BRACKET ASSEMBLY

David C. Byram, River Falls, Wis., and John V. Nowicki, Jr., St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 14, 1978, Ser. No. 896,581
Int. Cl.[2] A47F 5/08
U.S. Cl. 211—71 6 Claims



1. A bracket assembly adapted to serve as a hanger for a plurality of storage and shipping boxes for video cassettes each having a hook portion projecting over a recess in its walls, and a plurality of video cassettes each having an opening along one edge wall at a predetermined position between its side walls, said bracket assembly comprising

an elongate channel including:

a back portion having a contact surface; and

a hanger portion projecting from said back portion away from said contact surface and having a distal lip projecting in a generally parallel with said contact surface, said hanger portion and lip being sized so that with said back portion attached to a vertical surface, said channel horizontal, said contact surface adjacent said vertical surface and said lip projecting upwardly the hook portion on a said box may be engaged over the lip to hang the box with the hanger portion extending through the recess in the box;

a cassette adapter comprising:

a projecting finger portion having a ledge at its distal end, and being shaped to enter the opening in a said cassette and engage said ledge behind the edge wall of the cassette; and

guide means adapted to engage a side wall of a said cassette being hung on said projecting finger portion to position the cassette in the proper transverse alignment for engagement of said finger portion in the opening in the cassette; and

means adapted for releasably engaging said cassette adapter with said channel to position said finger portion along said hanger portion and projecting generally away from said contact surface so that with said channel horizontal and attached to a vertical surface as described above, said finger portion can be engaged through the opening in a cassette to hang it from the bracket assembly.

4,194,637
MOLDED PEG STRIP

Sydney Edson, New York, N.Y., assignor to Textron Inc., Providence, R.I.

Filed May 12, 1978, Ser. No. 907,512
Int. Cl.[2] A47F 5/00
U.S. Cl. 211—96 2 Claims

1. A display support comprising:

a plurality of hooks formed from round stock each having an elongate shank and a downturned foot; and

a flexible molded plastic peg strip to hold said hooks, including

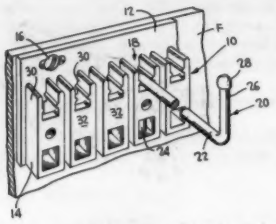
an elongate laterally flexible base adapted to be attached flush to a flat or curved surface and

a plurality of independent equally spaced pockets formed integrally along the length of said base and projecting therefrom, each pocket having

two parallel side walls of a height greater than the length of said hook foot, said walls being spaced apart a distance approximately equal to the diameter of said hook foot and extending a like distance from said base,

a front wall connecting said side walls below the top edges thereof to form a cavity with a square cross section,

a slot defined by the area between the side walls above the



front wall to receive the shank of a hook and to prevent horizontal swinging thereof,

a bottom surface interconnecting the lower edges of said side walls and said base to provide a stop for said hook foot, and

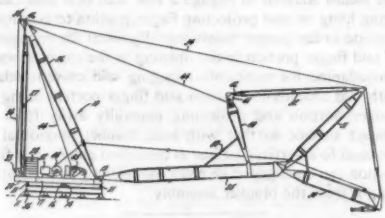
an aperture in said base extending substantially the full width of said cavity from above said bottom surface to below the top edges of said side walls, a portion of said base remaining adjacent said bottom surface to provide lateral support for said hook foot, said aperature facilitating insertion of a hook foot into said cavity by providing rear clearance for said foot to permit the foot to be inserted into the cavity while in substantial angular misalignment therewith.

4,194,638

RING SUPPORTED TOWER CRANE

James G. Morrow, Sr.; Michael C. Anderson, both of Manitowoc, and Richard L. Siehr, Two Rivers, all of Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Jun. 7, 1978, Ser. No. 913,502
Int. Cl.² B66C 23/26
U.S. Cl. 212—46 R **8 Claims**



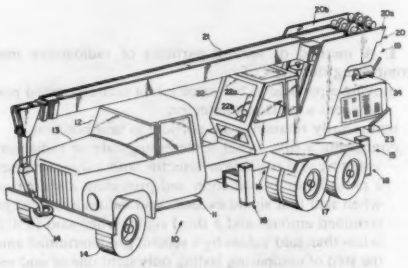
1. A crane assembly comprising, in combination, a ring defining an annular track, platform means fitted for rotation on said track, said platform having tower carrier means at one end in riding contact with said track and a counterweight support means at the other end also in riding contact with said track, a tower pivotally mounted on said carrier means above said track, an upwardly and rearwardly inclined mast also mounted on said carrier, means interconnecting said counterweight support means and the top of said mast, a boom pivotally mounted on the top of said tower, an upwardly and rearwardly inclined boom strut also mounted on the top of said tower, means including a backstay strut releasably connected to the top of said mast and the top of said boom strut, a tower backstay releasably connected to the top of said mast and said tower and means including a powered hoist drum mounted on said platform and wire rope wound on said drum and reeved over a sheave adjacent the top of said mast for raising and lowering said tower, boom, boom strut, backstay strut and tower backstay as a unit when said backstay strut and tower backstay are unconnected from the top of said mast.

4,194,639

TRUCK MOUNTED CRANE AND METHOD OF CONSTRUCTING SAME

John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.

Filed May 12, 1977, Ser. No. 796,437
Int. Cl.² B66C 23/06
U.S. Cl. 212—59 R **4 Claims**



1. A truck mounted crane comprising:

a truck front end including a source of energy, front braked steering wheels, a truck cab including a steering wheel, energy source controls and brake controls, and spaced longitudinal frame members extending rearwardly of said truck cab,

a rear end comprising a heavy load bearing frame including spaced longitudinal frame members, means joining said last mentioned frame members to said front longitudinal frame members at approximately the same level thereof, rear drive wheels, outrigger means carried by said load bearing frame, an upper works mounting structure supported by said load bearing frame, and

an upper works rotatably supported on said upper works mounting structure and comprising:

a platform,

a crane cab located forwardly on said platform, said crane cab comprising crane controls and having front and side windows,

boom support means of inverted "L" shape rigidly on said platform rearwardly of said crane cab, and comprising upwardly and rearwardly extending parts, the top of said rearwardly extending part of said boom support means being above the top of said crane cab, a boom pivoted on the rearwardly extending part of said boom support means and extending forwardly over said crane cab, and having a horizontal position in which the bottom is in closely spaced relation above the top of the crane cab, and the top of the truck cab,

said rearwardly extending part of said boom support means being substantially the highest part of said crane when said boom is horizontal,

said crane cab, boom support means and boom being laterally centered on said upper works,

crane upper works elements other than said boom and platform being rearwardly of said crane cab,

whereby to provide unobstructed vision for an operator in said crane cab forwardly and to both sides, and whereby

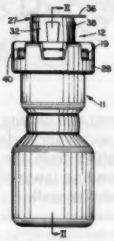
said truck mounted crane has low vertical height for travelling.

4,194,640

VIAL AND CLOSURE

Gary K. Crankshaw, Kalamazoo, and George W. Braymer, Ross Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 794,348, May 6, 1977, Pat. No. 4,089,432. This application May 8, 1978, Ser. No. 903,662
The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.
Int. Cl.[2] B65D *81/32*
U.S. Cl. 215—6 **10 Claims**



1. In a two-compartment container having a constriction between the two compartments capable of receiving a removable plug which provides a liquid-tight barrier between the two compartments, said container having a neck communicating with one of said compartments and said neck having an annular rim adjacent the free end thereof, and a closure structure for said neck, said closure structure comprising:

a resiliently flexible, substantially cylindrical stopper having a first portion with an outside diameter slightly larger than the inside diameter of said neck and snugly receivable into said neck and a second portion of reduced diameter projecting beyond the free end of said neck;

resiliently flexible cap means of substantially circular cross section having a fastening portion telescopically receivable onto the free end of said neck, said fastening portion having means for gripping said rim, said fastening portion including annular means overlying the upper edge of the stopper first portion so as to oppose its removal from the vial, and said cap means having a sleeve portion of reduced diameter snugly but slidably receivable onto the second portion of said stopper, said sleeve portion being attached to said fastening portion by manually fracturable means, said sleeve portion being slidably receivable with the second portion of said stopper through said annular means and into said neck by the application of force urging said sleeve portion toward said container;

cooperable lock means on said sleeve portion and said annular means for positively opposing movement of said sleeve portion out of said vial after said sleeve portion has been moved a preselected distance through said annular means; and

means attached to said outer end of said sleeve portion of said cap means for closing the outer end thereof.

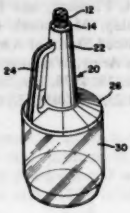
4,194,641

TWO-PIECE BLOW MOLDED CONTAINER WITH HANDLE

William R. Gaiser, Dayton, Ohio, assignor to The Broadway Companies, Inc., Dayton, Ohio

Filed Sep. 18, 1978, Ser. No. 942,891
Int. Cl.[2] B65D *23/10*
U.S. Cl. 215—100 A **6 Claims**

1. In a container blow molded from a preform having a neck and a tubular body which is expanded from the preform in the blow molding operation, the improvement comprising:



an attachment ring surrounding the upper portion of said body adjacent said neck, including means for locking said ring to said body when said preform is expanded, and

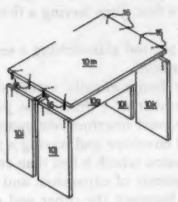
a handle formed as an integral part of said ring.

4,194,642

FURNITURE COMPONENT SYSTEMS

Ljiljana Glavan, 2029 Beaconwood Dr., Ottawa, Ontario, Canada

Filed Feb. 21, 1978, Ser. No. 879,715
Claims priority, application Canada, Mar. 3, 1977, 273084
Int. Cl.[2] B65D *9/12, 9/34, 7/00*
U.S. Cl. 217—12 R **31 Claims**



1. A furniture component system, comprising:

a plurality of plate-shaped members; and

a plurality of connecting members for connecting said plate-shaped members together;

each of said connecting members having a pair of mutually angularly divergent limbs;

each of said plate-shaped members having at least one edge formed with at least two holes extending inwardly of the respective plate-shaped member from the respective edge;

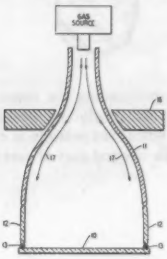
each of said holes being dimensioned to receive therein one of said connecting member limbs, and said holes being mutually parallel in selected ones of said plate-shaped members and being mutually angled in the remaining ones of said plate-shaped members, whereby each of said plate-shaped members is connectible together with an adjacent one of said plate-shaped members in mutually angularly disposed relationship allowing relative movement apart of the connected, adjacent plate-shaped members in only one direction.

4,194,643

METHOD AND APPARATUS FOR FRIT-SEALING HIGH TEMPERATURE CRT FACEPLATE TO CONVENTIONAL CRT ENVELOPE

Adolph G. Hager, Pt. Pleasant, and Philip F. Krzyzkowski, Middletown Township, Monmouth County, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1978, Ser. No. 970,904
Int. Cl.[2] C03B 23/20; C03C 27/06; H01J 29/87
U.S. Cl. 220—2.1 A 12 Claims



1. A method of joining a first glass member having a first thermal coefficient of expansion to a second glass member having a second thermal coefficient of expansion, said method comprising the steps of:

joining one end of a third glass member having a third thermal coefficient of expansion to said first member and also joining the other end of said third member to said second member, said third member extending lengthwise between said first and second members and acting as an intermediate stress-absorber and having a thermal coefficient of expansion which is less than both said first and said second coefficients of expansion, and applying a glass frit seal between said other end and said second member to join said third and second members.

10. A cathode-ray tube which comprises:

an envelope of a first glass having a first thermal coefficient of expansion;

a faceplate of a second glass having a second thermal coefficient of expansion;

an intermediate longitudinally extending cylindrical stress absorbing member of a third glass joining said envelope and faceplate, said intermediate member having one end sealed to said envelope and having a third thermal coefficient of expansion which is less than either said first or said second coefficients of expansion, and

a glass frit seal between the other end of said intermediate member and said faceplate.

4,194,644

ELECTRICAL JUNCTION ACCESS DEVICE

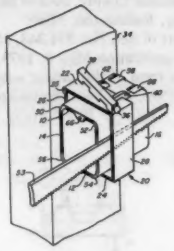
Henry R. Narvaez, 8913 Las Cruces Cr., Houston, Tex. 77028

Filed Apr. 5, 1978, Ser. No. 893,278
Int. Cl.[2] B23Q 17/02, 17/18; H02G 3/08
U.S. Cl. 220—3.3 11 Claims

1. An electrical junction access device for positioning in a wall structure and having a main body including a back wall and a tubular wall extending forwardly therefrom to form an enclosed area for electrical apparatus and defining a forward opening into said enclosed area opposite the back wall, said tubular wall having inner surfaces facing into said enclosed area and outer surfaces facing away from said enclosed area;

a guide sleeve externally surrounding said tubular wall and defining guide surfaces generally opposed to said outer surfaces of the tubular wall above and below and on either side thereof;

and spacer means interconnecting said main body and said sleeve to support said sleeve on said main body and spacing said guide surfaces of said sleeve from said outer surfaces of said tubular wall by a distance great enough to permit a cutting instrument to be inserted between said outer surfaces and guide surfaces but small enough to



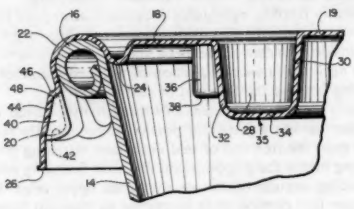
restrain the instrument to a cutting path generally parallel to and adjacent to said outer surfaces, said spacer means being rearwardly offset from the forward extremity of said sleeve and extending inwardly from said guide surfaces toward said tubular wall.

4,194,645

CONTAINER COVER CONSTRUCTION

Adolf Zabner, Warwick, and Norman I. Bellemore, Smithfield, both of R.I., assignors to Nyman Mfg. Co., East Providence, R.I.

Filed Oct. 10, 1978, Ser. No. 950,237
Int. Cl.[2] B65D 41/16, 43/06, 55/00
U.S. Cl. 220—306 3 Claims



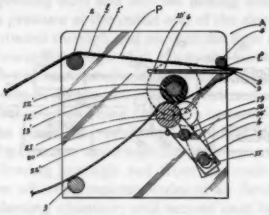
1. A cover for containers having an external peripheral bead at an upper edge thereof, said cover being formed of an easily flexed material and comprising a top wall, a downwardly extending peripheral skirt, and an inverted peripheral channel connecting said skirt to said top wall and for receiving said peripheral bead of an associated container, said skirt including a plurality of peripherally spaced inwardly directed generally U-shaped detents and a plurality of peripherally spaced flutes disposed between and in part defined by adjacent portions of said detents, said flutes terminating in a relatively straight, upper horizontally extending portion cooperatively forming an interrupted peripheral base line positioned radially adjacent the outer lower extent of said container bead receiving channel and about which said skirt may outwardly flex when said container bead is positioned within said channel with upper inner surface portions of said detents in contact therewith, said upper horizontally extending portions radially outwardly offset from circumferentially adjacent portions of said detents, said detents being most deeply inwardly directed at the bottom portions thereof and gradually upwardly extending so as to merge with said lower extent of said container bead receiving channel along said peripheral base line such that the upper extent of both detents and said flutes coextensively terminate at said peripheral base line.

4,194,646

MANUALLY OPERATED LABEL DISPENSING MACHINE

Allen H. Oglander, 9 Sackston Woods, St. Louis, Mo. 63141, and Richard E. Shannon, 355 Albert, St. Louis, Mo. 63131

Filed Sep. 13, 1978, Ser. No. 941,953
Int. Cl.² B65C *9/18*
U.S. Cl. 221—73 **18 Claims**



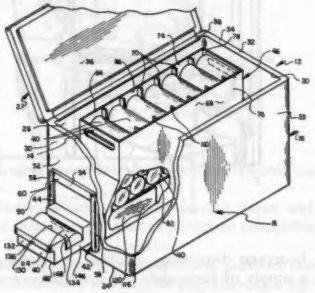
1. A machine for dispensing adhesive labels from a carrier sheet comprising a main frame having a pair of spaced-apart side plates, there being a work support plate mounted on said frame for direction of said carrier sheet thereover, said work support plate having a forwardly presented leading edge, a driven member journalled at its ends in said side plates for rotation about an axis perpendicular to the plane of said side plates and being disposed downwardly of said work support plate leading edge, a sub-frame swingably mounted upon said side plates, a drive roller rotatably carried upon said sub-frame for friction-producing engagement with said driven member in one limit of said sub-frame's movement of swing for cooperating with said driven member for gripping the carrier sheet therebetween to pull said sheet downwardly about said support plate leading edge for parting of labels therefrom, and means for imparting torque to said drive roller.

4,194,647

COOLER CHEST AND DISPENSER STRUCTURE

Harry A. Spurrier, 315 S. 8th St., Conway Springs, Kans. 67031

Filed Jan. 30, 1978, Ser. No. 873,555
Int. Cl.² A47F *1/10*; B65G *59/06*
U.S. Cl. 221—97 **4 Claims**



1. A cooler chest and dispenser structure operable to individually dispense objects therefrom such as can members, comprising:

(a) a cooler chest assembly having a can dispenser assembly operably connected thereto;

(b) said cooler chest assembly includes a main container body to receive the objects therein and a lid member connected to said main container body to open and close an access opening thereto;

(c) said can dispenser assembly includes an access door assembly connected to said main container body; a dispenser container structure releasably mounted in said main container body; and a dispenser drawer structure mounted in said dispenser container structure and positioned adjacent said access door assembly;

(d) said access door assembly having a door member movable vertically from opened to closed positions about an opening in said main container body;

(e) said dispenser drawer structure includes a dispenser end section to receive an object therein and integral with a block end section;

(f) said dispenser drawer structure is movable to a position outwardly of said door member to present an object for removal from said dispenser end section while, simultaneously, said block end section holds the other objects in the same position;

(g) said dispenser drawer structure is movable to a start position within said dispenser container structure and another object automatically moves into said dispenser end section for subsequent dispensing;

(h) said access door assembly having a door frame member secured to an outer surface of said main container body about said opening therein; and

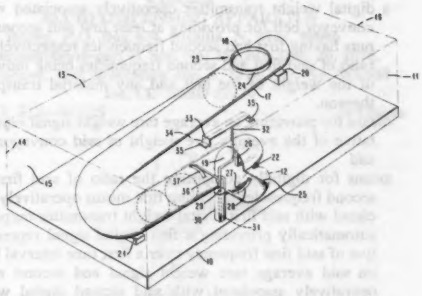
(i) said door frame member having a pair of spaced vertically extended support members to receive said door member therein for the vertical movement from opened to closed positions.

4,194,648

GOLF PUTTING TRAINING DEVICE

Robert Stanton, Rte. 44, Millbrook, N.Y. 12545

Filed May 12, 1978, Ser. No. 905,155
Int. Cl.² A63B *57/00*
U.S. Cl. 221—299 **4 Claims**



1. A putting guide comprising:

a base and integral top and end walls, and front and back vertical walls, forming an enclosure for placement on a putting surface, said vertical front wall providing an elongated reference surface to guide a putter in a straight line and having a length coextensive with a putting stroke;

storage means within said enclosure for a plurality of golf balls, said vertical front wall including an opening of a diameter sufficient to allow a golf ball to pass therethrough from said storage means to the putting surface, said enclosure having another opening cooperating with said storage means for placing golf balls in said storage means, and movable means for closing said another opening in said enclosure;

a guide, between said storage means and said opening in said vertical front wall having an upper surface for guiding a ball through said opening;

actuator means including retaining means, normally projecting above said upper surface of said guide to prevent passage of a ball to said opening in said vertical front wall,

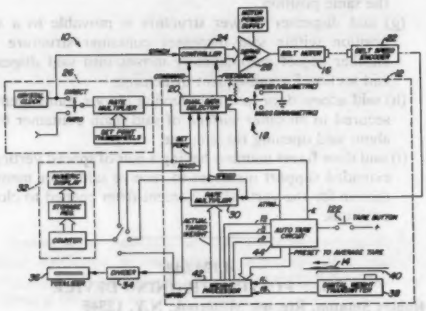
means extending through and above said top wall for depressing said retaining means to lower said retaining means to allow passage of a ball through said opening in said vertical front wall, and bias means for returning said retaining means to its normal position.

4,194,649

WEIGH FEEDER

Kenneth W. Bullivant, and Ron Van Ostenbridge, both of Glassboro, N.J., assignors to K-Tron International, Inc., Scottsdale, Ariz.

Filed Jun. 6, 1977, Ser. No. 803,905
Int. Cl.[2] G01G *13/14, 23/14*
U.S. Cl. 222—55 **9 Claims**



1. In a digital weigh feeder including a conveyor belt for transporting material thereon, the conveyor belt having an average tare weight associated therewith, the combination comprising:

a digital weight transmitter operatively associated with a conveyor belt for providing at least first and second outputs having first and second frequencies respectively, the ratio of said first and second frequencies being indicative of the weight of the belt and any material transported thereon,

means for providing an average tare weight signal representative of the average tare weight of said conveyor belt, and

means for digitally computing the ratio of said first and second frequencies including first means operatively associated with said first digital weight transmitter output for automatically providing a first digital signal representative of said first frequency over a first time interval based on said average tare weight signal and second means operatively associated with said second digital weight transmitter output for automatically providing a second digital signal representative of said first frequency over a second time interval based on said second frequency.

4,194,650

LIQUID MIXING AND AERATING SYSTEM

James E. Nottke, Seminole, and Jack K. Ruebel, Clearwater, both of Fla., assignors to Lykes Pasco Packing Co. Dispenser Manufacturing Div., Clearwater, Fla.

Division of Ser. No. 768,612, Feb. 14, 1977. This application Mar. 2, 1978, Ser. No. 882,658
Int. Cl.[2] B67D *1/10*
U.S. Cl. 222—57 **7 Claims**

1. A system for mixing a first liquid diluent and a second liquid concentrate in a fluid passage comprising in combination:

regulating means for regulating the flow of the first liquid;

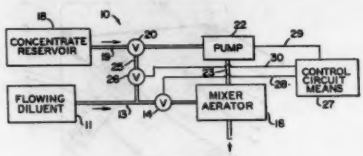
pumping means for pumping the second liquid;

control means for controlling said pumping means and varying the pumping rate thereof in accordance with the flow of the first liquid to maintain a given volumetric relationship between the first liquid and the second liquid;

mixing means for mixing said given volumetric relationship of said first and second liquids enabling the mixture to flow from the fluid passage;

said regulating means including valve means disposed in a conduit connecting the first liquid to said mixing means;

means connecting said control means to said valve means for simultaneously energizing and deactivating said valve



means and said pumping means in response to an electrical signal from the control means for controlling the flow rate of the first liquid and the pumping of the second liquid;

said mixing means comprising intersecting conduits extending from said pumping means and said valve means to mix the first and second liquids therein; and

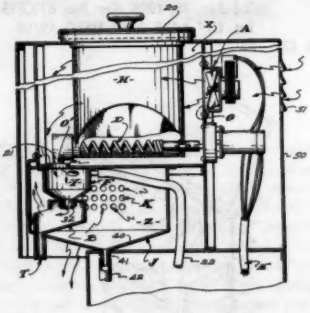
one way valve means interposed in said conduit between said intersection of said conduits and said valve means for prohibiting the second liquid concentrate from entering said value means and the source of said first liquid diluent.

4,194,651

DISPENSING AND MIXING MEANS FOR WATER AND DEHYDRATED COFFEE

Ernest N. Martin, Escondido, and Michael L. Keirns, Alta Loma, both of Calif., assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Oct. 31, 1977, Ser. No. 846,904
Int. Cl.[2] B67D *1/16*
U.S. Cl. 222—108 **5 Claims**



1. A beverage dispensing machine comprising a hopper holding a supply of particulate dehydrated beverage concentrate, a concentrate dispensing means connected with the hopper; said dispensing means has a dispensing duct with an outlet end and is intermittently operable to transport a predetermined volume of concentrate from the hopper outwardly through a dispensing duct, a funnel defining a mixing chamber receiving concentrate from the dispensing means, water supply and delivery means delivering a predetermined volume of water into the mixing chamber each time concentrate is received thereby and establishing reconstituted beverage in the mixing chamber, an outlet tube extending from the funnel to exhaust moisture-ladened air and to drain beverage from the

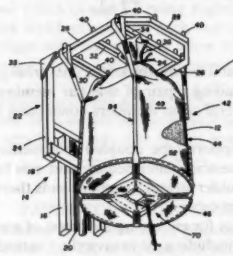
mixing chamber, a case about the hopper and dispensing means and defining a compression chamber, an air inlet opening in the case opening to the ambient atmosphere, air pump means at said air inlet opening delivering air at greater than atmospheric pressure into the compression chamber to cool said hopper and dispensing means and the concentrate therein, an air outlet opening in the case communicating with the mixing chamber, the outlet end of the dispensing duct is positioned at said air outlet opening whereby air flowing through the outlet opening about the dispensing duct and into the mixing chamber establishes a minus pressure at the outlet end of the dispensing duct to draw air outward through and prevent the flow of moisture-ladened air inward through that duct; air moving into the mixing chamber moves out of said chamber through said outlet tube transporting beverage and moisture-ladened air out of the mixing chamber, a second case defining a condensing chamber into which the outlet tube projects, a blending trough within the condensing chamber and receiving beverage and moisture-ladened air flowing through and from the outlet tube, said trough is open whereby moisture-ladened air flows therefrom into the condensing chamber, said second case has air outlet means to exhaust air from within the condensing chamber, said second case has a lower portion defining a condensate catch basin, said trough includes a dispensing tube depending through and from the second case to drain the trough and dispense beverage from the machine.

4,194,652

COLLAPSIBLE RECEPTACLE FOR FLOWABLE MATERIALS

Robert R. Williamson, Dallas County, and Norwin C. Derby, Grayson County, both of Tex., assignors to Super Sack Manufacturing Corporation, Dallas, Tex.

Continuation of Ser. No. 813,634, Jul. 7, 1977, Pat. No. 4,143,796. This application Oct. 30, 1978, Ser. No. 955,529
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.[2] B65D *29/02*
U.S. Cl. 222—185 **31 Claims**



1. A collapsible receptacle for handling flowable materials, comprising:

a substantially flexible container having upper and lower ends and defining a generally cylindrical collapsible chamber for the flowable materials;

said container including an upstanding sidewall comprised of one substantially rectangular panel having a top edge, a bottom edge, and two side edges with the sides of the panel secured together inwardly of the side edges to form one outwardly facing and longitudinally extending container sidewall seam;

the upper end of said container comprising a selectively closeable fill opening;

means for selectively closing the fill opening; and

a flexible and substantially inextensible sling assembly for supporting the container, said sling assembly having a plurality of lift straps extending upwardly in circumferentially spaced relationship with the top ends of the straps terminating a predetermined distance beyond the upper end of the container;

one of said lift straps being provided for the container sidewall seam and folded along its length so that longitudinal strap portions overlay the outwardly facing edges of the sidewall seam, with at least one of the other of said lift straps being folded along its length over a longitudinally folded portion of the sidewall panel, and with each of said folded lift straps being continuously secured therethrough over a major portion of the height of the container so that said folded straps are interconnected with at least two thicknesses of container material.

20. A method of manufacturing a collapsible receptacle for flowable materials, comprising the steps of:

(a) providing a plurality of rectangular panels comprised of flexible material;

(b) circularly arranging the panels in edge to edge relationship;

(c) connecting adjacent panels inwardly of the adjacent edges to form a container sidewall having a plurality of outwardly facing sidewall seams;

(d) providing a circular bottom wall comprised of flexible material;

(e) connecting the bottom wall across the lower end of the container sidewall;

(f) providing a plurality of lift straps comprised of flexible but substantially inextensible material;

(g) positioning each lift strap over a container sidewall seam and folding each of said lift straps along its length over the corresponding sidewall seam such that at least two layers of container sidewall material are enclosed between longitudinal portions of each of said straps; and

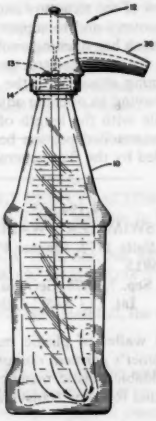
(h) interconnecting each of the thus folded lift straps and the enclosed layers of sidewall material over a portion of the height of the container.

4,194,653

FLUID DISPENSING APPARATUS

Joe L. Brown, P.O. Box 624, Mesilla, N. Mex. 88046

Continuation-in-part of Ser. No. 752,202, Dec. 20, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,538
Int. Cl.[2] B65D *83/14*
U.S. Cl. 222—402.25 **8 Claims**



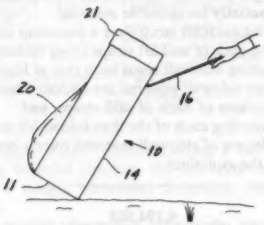
1. An apparatus for dispensing fluids comprising, in combination, a fluid container having a discharge opening and a dispensing valve mechanism detachably coupled with said discharge opening of said container; said dispensing valve mechanism comprising a main valve body having an upper wall portion and a lower integral annular flange portion;

adapter means for detachably coupling said valve mechanism to said fluid container; said adapter means positioned within said lower annular flange portion of said main valve body; said dispensing valve mechanism further comprising a valve stem movably mounted within a central cavity formed in said main valve body; a fluid discharging spout secured to said main valve body and in operable communication with said cavity formed in said main valve body; an elongated tube projecting into said fluid container and being in sealing engagement with said adapter means; the ratio of the internal diameter of said elongated tube and said discharge spout being at least about 1.2 to 1; means for maintaining said valve stem in a normally closed position; means secured to said valve stem which, upon the application of a force thereto, causes said valve stem to move into an open position whereby the fluid in said container is caused to be forced through said fluid discharging spout by the vapor pressure of said fluid itself.

4,194,654
BAG CARRIER

David H. Badger, 5883 N. Crestview Ave., Indianapolis, Ind. 46220

Filed Jun. 12, 1978, Ser. No. 914,730
Int. Cl.[2] B65D 71/00
U.S. Cl. 224—45 H **16 Claims**



1. A carrier for a trash bag, comprising; a one-piece structure formed from elastic material and with a generally hollow three sided shape without front and top surfaces to permit insertion of the trash bag and with sufficient material forming a base and side walls with a top edge to engage the opening of the trash bag by deformation of the structure and to hold the trash bag open by elastic recovery and to support the trash bag and its contents with the trash bag opening unobstructed, the side wall opposite the open front of the structure including a flap cut therein and remaining attached to the side wall at its upper portion, said flap having an opening adjacent its free end to be grasped as a handle with the length of the flap between the opening and the unattached portion being sufficient that the carrier can be pulled by the flap generally without stooping.

4,194,655
SWIMMER'S WALLET

Richard Tillotson, Suite 1777, Pioneer Plz., 900 Fort St. Mall, Honolulu, Hi. 96813

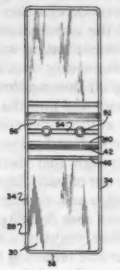
Filed Sep. 7, 1978, Ser. No. 940,231
Int. Cl.[2] A45C 1/04
U.S. Cl. 224—191 **30 Claims**

1. A watertight wallet of plastic material adapted to be attached to a swimmer's garment comprising

an elongated foldable plastic member with a longitudinal axis and a medial fold line transverse to said longitudinal axis,

an article receiving pocket permanently fused on three edges to the foldable member with a fourth edge comprising a watertight sealing means which cooperates with complementary sealing means on the foldable member, wherein the watertight sealing means and the complementary sealing means are located near and parallel to the fold line,

attachment means on the fold line of the foldable member to facilitate securing the watertight wallet to the swimmer's garment, wherein a swimmer may couple the wallet to the

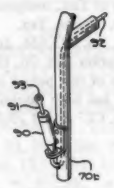


garment by folding the wallet about a top edge of the garment.

4,194,656
BACKPACK AND FRAME APPARATUS

Anthony C. Zufich, P.O. Box 898, Lake Isabella, Calif. 93240

Division of Ser. No. 690,068, May 26, 1976, Pat. No. 4,099,657.
This application Apr. 10, 1978, Ser. No. 894,871
Int. Cl.[2] A45F 3/10
U.S. Cl. 224—211 **2 Claims**



1. A backpack and frame apparatus comprising:

(a) a frame including a pair of side bar members and upper and lower lateral cross members connecting said side bar members;

(b) an upper support tube coupled intermediate a pair of upper cross members intermediate said side bar members;

(c) a pair of shoulder straps, the upper ends thereof attached to said support tube;

(d) hip belt means for encircling the waist of a user, said hip belt means including downwardly extending panels adapted to lie along the hips of the user, each of said panels including grommets for attachment thereto, said grommets being diametrically opposed to one another;

(e) means for attaching the lower ends of said shoulder straps to respective ones of said side bar members substantially adjacent the waist of the user;

(f) a pair of frame extenders each integral with one of said pair of side bar members, said frame extenders being deflected forwardly and downwardly from said side members, the termini of said frame extenders being adjacent said hip belt means;

(g) a hydraulic fluid conduit, the ends thereof disposed intermediate the termini of said frame extenders; and

(h) a hydraulic cylinder assembly comprising a hydraulic cylinder and piston secured at the terminus of each of said frame extenders, said hydraulic cylinders being coupled to opposite ends of said hydraulic conduit, said pistons being secured to respective ones of said grommets whereby reciprocating motion of said hip belt means will be transferred to said pistons maintaining said frame substantially

stationary independent of movement of said hip belt means.

4,194,657

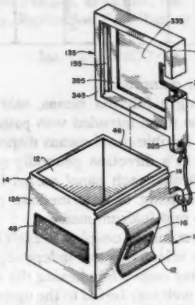
SHOTGUN AMMUNITION CONTAINER

Gary Thor, 708 Ohio St., Vallejo, Calif. 94590

Continuation-in-part of Ser. No. 820,708, Aug. 1, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,308

Int. Cl.[2] **A41F** *9/00;* **A42B** *37/00, 39/00*

U.S. Cl. 224—252 **9 Claims**



1. A two-piece ammunition shell container comprising a box and a self-locking detachable lid, and sealing means for said container;

said lid having a top and four downwardly depending side walls, each of said walls having a groove extending inwardly from its interior surface;

the box having a base and four upstanding rigid vertical side walls each of which has an outwardly disposed ridge on the top portion of the exterior surface thereof adapted to engage the groove of said lid's corresponding side wall, wherein said grooves are sized to engage said ridges, the length and width of said lid being slightly larger than the length and width of said box such that upon engagement of said ridges with said grooves when the lid is applied, a water resistant sealing means to prevent moisture entry is formed;

means to interconnect said lid to said box to prevent separation of said lid from said box when said lid is detached; and

a belt clip attached to one side of said box.

4,194,658

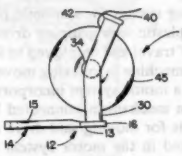
PAPER TOWEL DISPENSER

Arlow H. Tschudin, 10875-64th Ave., Allendale, Mich. 49401

Filed Jul. 20, 1978, Ser. No. 926,417

Int. Cl.[2] **B26F** *3/02*

U.S. Cl. 225—65 **11 Claims**



1. A dispenser for roll sheet material comprising:

a base including a handle, said base having a flat bottom surface and an upper surface, said bottom surface permitting free standing of the dispenser on a generally horizontal surface;

a pair of support arms extending from said base in spaced relationship for receiving a roll of sheet material therebetween, each support arm extending in a plane perpendicular to a plane defined by the flat bottom surface of said base; and

a cross bar coupled to the ends of said support arms remote from said base for preventing the unraveling of rolled sheet material and for providing a tear strip against which segments of the sheet material can be removed from the roll.

4,194,659

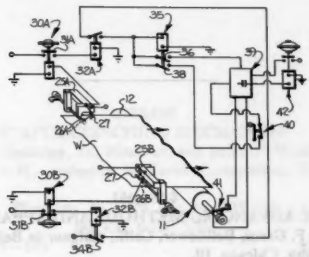
SEAM RESPONSIVE ROLLS AND METHOD

Steven W. Birch, Monroe, N.C., assignor to Birch Brothers Southern, Incorporated, Waxhaw, N.C.

Continuation-in-part of Ser. No. 809,427, Jun. 23, 1977, Pat. No. 4,128,212. This application May 19, 1978, Ser. No. 907,566

Int. Cl.[2] **B65H** *23/16*

U.S. Cl. 226—35 **12 Claims**



1. In a web material handling apparatus having means for guiding lengths of web material joined by widthwise seams along a path of travel, and nip roll means for engaging web material at a predetermined position along the path of travel, an improvement which controls operation of the nip roll means for of seam detector means mounted adjacent said path of travel, upstream of said nip roll means position, each for sensing widthwise seams in web material guided along said path of travel toward said nip roll means position, and control means operatively connected to said detector means and to said nip roll means for separating said nip roll means relative to web material in response to and in predetermined relation with seam sensing by all of said detector means.

4,194,660

SHEET FEED TRACTOR

Alan F. Seitz, Harwinton, Conn., assignor to Data Motion, Inc., Torrington, Conn.

Filed Nov. 6, 1978, Ser. No. 957,683

Int. Cl.[2] **B63H** *17/38*

U.S. Cl. 226—74 **7 Claims**

1. In a drive tractor for web material, the combination comprising:

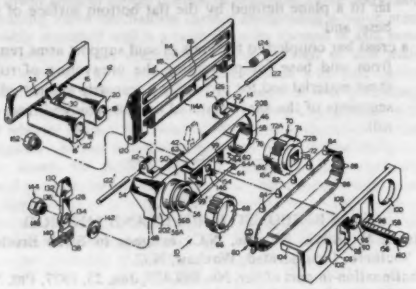
a. a chassis;

b. a flexible endless belt mounted on said chassis, said belt having an inner driven surface and an outer driving surface and defining a closed path of travel; and

c. belt driving means mounted on said chassis and including a rotatable member adapted to be rotated by a drive member, said rotatable member drivingly engaging said inner driven surface of said belt when said belts is in said path of travel;

said chassis having wall means thereon adjacent said rotatable member and extending transversely of said belt and disposed

outwardly of and closely adjacent said path of travel to limit the amount of deflection of said belt from said path and thereby



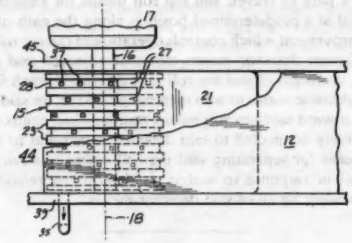
prevent disengagement of said belt from said rotatable member.

4,194,661

TAPE ADVANCING METHODS AND APPARATUS

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,330
Int. Cl.[2] B65H *17/28*
U.S. Cl. 226—95 **28 Claims**



12. Apparatus for advancing a tape, comprising in combination:

a tape capstan having circumferential grooves distributed across the capstan;

means coupled to the tape capstan for providing a force in each groove attracting the tape to the capstan;

means for guiding the tape to a first peripheral capstan region extending across the capstan;

means connected to said capstan for rotating said capstan to advance the tape through an arc to a second peripheral capstan region extending across the capstan, while the tape is attached to the capstan by the force in each groove;

means for releasing the tape from the capstan at said second peripheral capstan region and for guiding the released tape away from the capstan; and

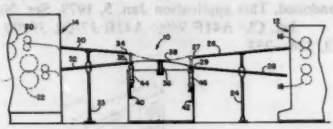
means for shielding the tape externally of said capstan against the force in each groove during said guiding to the first peripheral capstan region and during said guiding away from the capstan.

4,194,662

WEB DIRECTOR

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Aug. 28, 1978, Ser. No. 937,397
Int. Cl.[2] B65H *17/42*
U.S. Cl. 226—110 **6 Claims**



1. A web director comprising:

(a) a frame having a fulcrum means, said fulcrum means being transverse to an intended web path,

(b) a plurality of flexible panel means disposed side by side and extending in a direction generally perpendicular to said fulcrum means, each panel means having two free ends, means coupling an intermediate portion of each panel means to said fulcrum means,

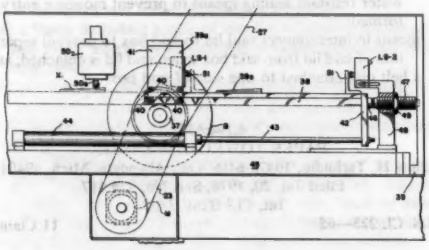
(c) a discrete power means coupled to each free end of each panel means for selectively and independently raising and lowering said free ends while flexing the associated panel means so that a web may be fed to the upstream end of said panel means and supported thereby at either of two elevations and may be discharged therefrom to either of two elevations on the downstream end of said panel means.

4,194,663

HYDROMECHANICAL PLASTIC WEB INDEXING SYSTEM FOR SYNTHETIC PLASTICS THERMOFORMING MACHINERY

George A. West, Clare; Albert W. Arends, Gladwin, and George L. Pickard, Beaverton, all of Mich., assignors to Leesona Corporation, Beaverton, Mich.

Filed Jul. 24, 1978, Ser. No. 927,359
Int. Cl.[2] B65H *17/26*
U.S. Cl. 226—139 **9 Claims**



1. In an indexing system for synthetic plastics molding machines including plastic web gripping drive elements movable in a planar path of travel and employed to feed a plastic web to the molds of said machine in indexing movements separated by periods of dwell; a motor system incorporating a motor and a drive transmission mechanism connected between the motor and drive elements for moving said drive elements; a braking device incorporated in the motor system for instantaneously braking the mechanism and drive elements to locate the latter in precise position; means for disabling the motor system to cease transmission of drive force to said drive elements; and a drive decelerating device connected with the motor system for slowing the drive imparted to said drive elements; the improvement comprising: a movable indexing stroke measuring device driven by the drive transmission mechanism in a path of movement corresponding with the indexing movement of said

web gripping drive elements; and first and second control parts positioned to be engaged thereby, the movable stroke measuring device having first engagement near the end of the indexing movement with a part enabling the decelerating device and second engagement with a part connected to enable said braking device and said means for disabling the motor system.

4,194,664

FIRING SAFETY FOR A PNEUMATIC NAILER

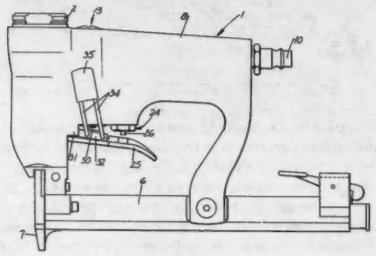
Carl Siegmann, Bremen, Fed. Rep. of Germany, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Feb. 26, 1979, Ser. No. 15,419

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811339

Int. Cl.² B25C *1/04*

U.S. Cl. 227—8 **5 Claims**



1. A firing safety for a pneumatic nailer having a housing, a handle, and a pneumatically controlled inlet valve for pressurized air, and having a piston, and a trigger valve communicating with said inlet valve through a passageway whereby to actuate said piston to open said inlet valve upon actuation of said trigger valves; characterized by an opening from said passageway to atmosphere, and a manually operable safety valve for closing said opening, to permit actuation of said inlet valve.

4,194,665

PNEUMATIC STAPLER

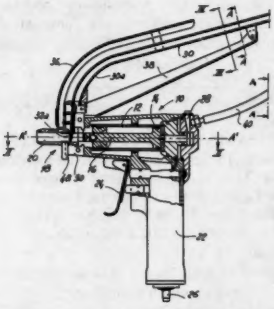
Giordano B. Maestri, 26, Via Foppa, Milano, Italy

Filed Jan. 31, 1978, Ser. No. 873,928

Claims priority, application Italy, Feb. 10, 1977, 20146 A/77

Int. Cl.² B25C *5/06*

U.S. Cl. 227—112 **9 Claims**



1. A pneumatic stapler, comprising a housing having an elongated guiding passage for guiding a staple to be struck along said passage; a pneumatically operated stapling hammer for striking the staple located in said guiding passage; and elongated hollow staple magazine for unconnected separate staples, having a first end open into said guiding passage and a second end spaced from said first end along the elongation of said magazine; pneumatically operated means for displacing the staples towards said first end of said magazine, including a pneumatic nozzle connection located on said magazine between said first and second ends thereof and a hose for applying air pressure to the pneumatic nozzle connection when the stapling hammer is operated, at least some of said separate staples which are located in said magazine upstream of said nozzle connection tending to move towards said second end of said magazine under the force of gravity when said magazine is inclined so that said first end of the magazine is higher than said second end thereof; and a spring pawl in said magazine located upstream of said nozzle connection, for preventing movement of said some staples towards said second end of said magazine.

4,194,666

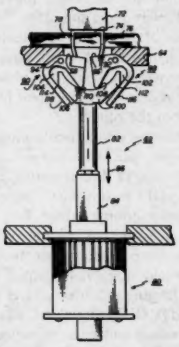
STAPLE CLINCHING MECHANISM

Charles W. Spehrley, Jr., Hanover, and Brian F. Walsh, Etna, both of N.H., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1978, Ser. No. 919,538

Int. Cl.² B25C *5/02*

U.S. Cl. 227—155 **12 Claims**



1. An apparatus for stapling articles, including:

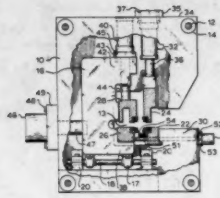
means for driving a staple through the articles so that a portion of the staple legs extends therethrough; and

means for bending the portions of the staple legs protruding through the articles into substantial contact therewith so as to clinch the staple, said bending means comprising a pair of pivotably mounted clinching ears, each of said clinching ears having a surface with a groove therein for guiding each of the staple legs during the bending thereof with the central region of each of the grooves having a greater cross sectional area than the end regions thereof and the central regions of each of the grooves being located to receive each of the staple legs at the initiation of the clinching operation, and each of said clinching ears includes a a recessed portion opposed from the groove of the other of said clinching ears so as to provide for the portion of each of the staple legs extending beyond the groove therein.

4,194,667
APPARATUS FOR PRESSURE WELDING METAL WORKPIECES

Lloyd A. Cook, Parkersburg, W. Va.; Kim A. Reynolds, Shelburne, and Werner J. Mark, Orangeville, both of Canada, assignors to Alforge Metals Corporation, Limited, Orangeville, Canada

Division of Ser. No. 711,037, Aug. 2, 1976, Pat. No. 4,094,453.
This application Apr. 4, 1978, Ser. No. 893,220
Int. Cl.[2] B23K *19/00, 5/02*
U.S. Cl. 228—4.1 2 Claims



1. A forging press for joining two metal workpieces together by pressure welding comprising:

(a) at least one pair of stationary C-shaped metal plate frames arranged in a parallel side-by-side spaced-apart relationship,

(b) a laterally movable C-shaped metal frame mounted between each pair of stationary C-shaped metal plate frames,

(c) a first pair of die holders associated with each pair of stationary C-shaped metal plate frames adapted to grip a workpiece therebetween, at least one of said die holders being mounted for reciprocal movement in a direction towards and away from the other,

(d) a second pair of die holders associated with said laterally movable C-shaped metal frame adapted to grip a workpiece therebetween, at least one of said die holders being mounted for reciprocal movement in a direction towards and away from the other,

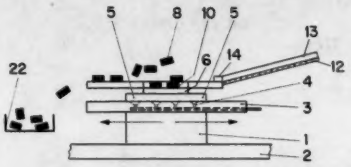
(e) means for moving said laterally movable C-shaped metal frame between said stationary C-shaped metal plate frames comprising a double-acting forging cylinder rigidly secured to the stationary C-shaped metal plate frames and operatively connected to said movable C-shaped metal frame and a detent cylinder rigidly secured to said stationary C-shaped metal plate frames and operatively connected to said movable C-shaped metal frame in opposition to the forging cylinder whereby die holders associated with said laterally movable C-shaped metal frame can be moved towards and away from the die holders associated with said stationary C-shaped metal plate frames such that workpieces gripped therebetween can be spaced a predetermined distance apart in alignment with each other prior to abutment of said workpieces for pressure welding and can be abutted together at a pressure above the yield strength of the parent material at working temperatures sufficient to permit metal flow, and

(f) means for rapidly heating the opposed edges of said workpieces to a uniform temperature within the range of from about 200° to about 900° F. while said workpieces are spaced a fixed distance apart immediately prior to abutment for pressure welding including a heat source uniformly disposed along the spaced edges of the opposed workpieces comprising a manifold assembly disposed adjacent one of said dies having a plurality of outlets disposed at equal intervals along the length of the said die adapted to introduce a flow of a combustible mixture of gases to achieve said uniform heating of the opposed edges of the workpieces.

4,194,668
APPARATUS FOR ALIGNING AND SOLDERING MULTIPLE ELECTRODE PEDESTALS TO THE SOLDERABLE OHMIC CONTACTS OF SEMICONDUCTOR COMPONENTS

Altan Akyürek, Heppenheim, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 7, 1977, Ser. No. 858,340
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2656019
Int. Cl.[2] B23K *1/12*
U.S. Cl. 228—6 A 9 Claims



1. An apparatus for aligning and soldering pedestals to the solderable ohmic contacts of individual semiconductor components formed by an individual silicon wafer, comprising:

an electromagnetically driven shaker table having a gently sloped pedestal feed surface having pedestal sorting chutes and a pedestal selector comb, said comb adapted to be disposed adjacent said wafer so that pedestals located on said feed surface can be distributed to said ohmic contacts of said wafer;

mask means for aligning said pedestals over said ohmic contacts;

means for maintaining said mask means in a fixed position respective to said silicon wafer adjacent said comb;

a removable mounting and soldering base plate removably mounted on said shaker table and adapted to support on said shaker table said wafer with said mask means placed over said wafer for distribution of the pedestals onto the ohmic contacts; and

soldering assembly means for receiving said base plate with said undivided wafer having said pedestals distributed thereon, said soldering assembly means comprising a removable upper retention part adapted to be coupled to said base plate after distribution of said pedestals with said wafer retained between said base plate and said retention part, and a removable top part supported on said retention part, and means for coupling said base plate, said retention part, and said top part for retaining said pedestals in alignment on said silicon wafer during removal of said base plate from said shaker table and during soldering of said pedestals to said ohmic contacts.

4,194,669
METHOD OF MAKING LEADED DECORATIVE PANELS

John R. Bromberg, 15 San Roberto Way, Downsview, Ontario, Canada (M3L 2J4), assignor to John Robert Bromberg and Robert Allan Levine, both of Toronto, Canada

Filed Jan. 22, 1979, Ser. No. 5,141
Int. Cl.[2] B23K *1/12, 1/20*
U.S. Cl. 228—120 10 Claims

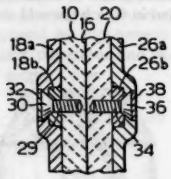
1. A process of making leaded transparent or translucent panels such as windows, which comprises:

applying a strip of metallic lead to a major surface of a sheet of transparent or translucent thermoplastic material;

forming a hole through the lead strip and at least part way into the thermoplastic sheet underlying the lead strip;

securing the lead strip to the thermoplastic sheet by applying solderable metallic securing means through the hole in

said lead strip and into the hole in the thermoplastic sheet underlying the lead strip;



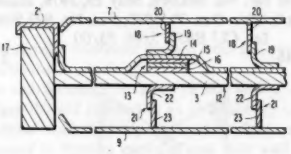
soldering the securing means to the lead strip by applying heat and a molten lead containing soldering compound to the exterior surface of the lead strip and securing means.

4,194,670

METHOD OF MAKING A BIPOLAR ELECTRODE

Teruo Ichisaka, and Tadao Ikegami, both of Tamano, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Division of Ser. No. 886,862, Mar. 15, 1978, Pat. No. 4,141,815.
This application Oct. 10, 1978, Ser. No. 950,114
Claims priority, application Japan, Aug. 24, 1977, 52-100633
Int. Cl.[2] C25B *11/00*; B23K *31/02*
U.S. Cl. 228—179 **1 Claim**



1. A method for producing a bipolar electrode of the type having an electrode frame, a partition wall having a composite structure of an anode-side sheet and a cathode-side sheet, an anode plate disposed on the anode-side of said partition wall, a cathode plate disposed on the cathode-side of said partition wall, and a plurality of electrically conductive spacers, said method comprising the steps of:

(a) welding a first electrically conductive spacer element to a predetermined part of said cathode-side sheet, and welding a second electrically conductive spacer to a predetermined part of said anode-side sheet of said partition wall;

(b) welding a peripheral part of said cathode-side sheet to an intermediate part of said electrode frame;

(c) lining said anode-side sheet on said cathode-side sheet and fixing a peripheral part of said anode-side sheet to a periphery of said electrode frame;

(d) superimposing a third electrically conductive spacer element on said first electrically conductive spacer element and adjusting same so that an end surface of said third electrically conductive spacer element is horizontal, and welding a superimposed surface;

(e) superimposing a fourth electrically conductive spacer element on said second electrically conductive spacer element and adjusting same so that an end surface of said fourth electrically conductive spacer element is horizontal, and welding a superimposed surface; and

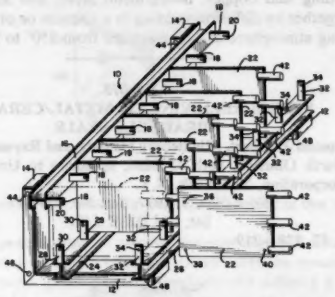
(f) welding said cathode plate to said end surface of said third electrically conductive spacer element, and welding said anode plate to said end surface of said fourth electrically conductive spacer element.

4,194,671

METHOD FOR CONSTRUCTING A STEAM CONDENSER

George J. Williams, Chalfont, and Robert C. Boyer, Bethlehem, both of Pa., assignors to Ecolaire Incorporated, Malvern, Pa.

Division of Ser. No. 789,921, Apr. 22, 1977, Pat. No. 4,131,270.
This application Jun. 6, 1978, Ser. No. 913,140
Int. Cl.[2] B23P *15/26*; B23K *31/02*
U.S. Cl. 228—183 **5 Claims**



1. A method of assembling a condenser comprising the steps of

(a) providing an elongated rigid L-shaped member having sets of aligned locating members at spaced locations therealong with each leg of the L-shaped member having at least one locating member of each set thereon,

(b) attaching a discrete perforated tube support plate to each set of locating members so that corresponding tube holes in the support plates are aligned,

(c) attaching a side plate to each of said tube support plates while the support plates are above the side plate and supported by said L-shaped member,

(d) supporting said condenser section by said L-shaped member from above with the side plate vertically disposed while joining said side plate to a mating side plate of another condenser section, and

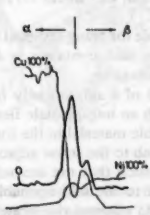
(e) disconnecting said L-shaped member from said support plates after said condenser sections have been joined together.

4,194,672

PROCESS FOR THE DIFFUSION WELDING OF COPPER AND STAINLESS STEEL

Yoshimitsu Uto; Takashi Omae; Yasuhiro Fukaya, and Yasuyuki Yoshida, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1978, Ser. No. 939,119
Claims priority, application Japan, Sep. 5, 1977, 52-105925
Int. Cl.[2] B23K *19/00*
U.S. Cl. 228—194 **14 Claims**



1. A process for the diffusion welding of copper and stainless

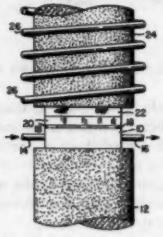
steel, which comprises the step of smoothening the surfaces of copper and stainless steel to be bonded together, cleaning the both surfaces until chemically active surfaces are exposed, and bringing either active surface into close contact with the mating stainless steel or copper surface smoothened and cleaned in advance, through a layer of insert metal which is at least one metal selected from the group consisting of Ni, Ni-base alloys, and Cr, said layer of insert metal containing not more than 140 ppm O_2 and ranging in thickness more than 5μ; and the step of bonding said copper, insert metal layer, and stainless steel altogether by diffusion welding in a vacuum or other non-oxidizing atmosphere at a temperature from 850° to 950° C.

4,194,673

STRESS RELIEVING OF METAL/CERAMIC ABRADABLE SEALS

Raymond J. Elbert, Middleburg Heights, and Raymond V. Sara, North Olmsted, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1977, Ser. No. 849,897
Int. Cl.² B23K *1/04*
U.S. Cl. 228—219 **18 Claims**



1. Process for bonding a multi-layer ceramic/metal abradable composite having a ceramic-rich surface, a metal-rich surface and at least one intermediate layer to a metallic substrate which comprises placing said abradable composite with its metal-rich surface in contact with said substrate, heating said composite and substrate to a sintering temperature sufficient to bond said composite to said substrate, thereafter cooling the thus formed structure in such a manner that before the onset of elastic stresses in said structures due to said cooling a temperature differential is established across the structure, with a temperature of said substrate being maintained consistently lower than the temperature of the ceramic-rich surface of said composite during the remainder of the cooling to ambient temperatures.

4,194,674

CONTAINER WITH BUILT IN STRAW

Kenneth Pearson, RD 3, Box 241-A, Tyrone, Pa. 16686

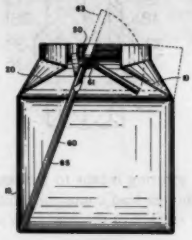
Filed Sep. 11, 1978, Ser. No. 941,492
Int. Cl.² B65D *77/28*
U.S. Cl. 229—7 S **3 Claims**

1. A straw adaptable for being fastened inside a closed beverage container where said container is fitted with openable means to seal said container;

said straw formed of a substantially hollow tubular shape and formed with an intermediate flexible section;

a flat strip of flexible material in the form of a tab fixed at a first end of the tab to the straw adjacent said intermediate flexible section such that the second end of the said tab may be fastened to the said openable means to seal said container so as to suspend the straw inside the container and folded about the said intermediate section, in which the said intermediate flexible section is of corrugated construction, and in which the tab is fastened to the straw so as to extend at an acute angle towards the intermediate section, in which

the beverage container is of folded paper construction and in which the openable means to seal the container are in the form of flaps, and in which the said straw is folded about



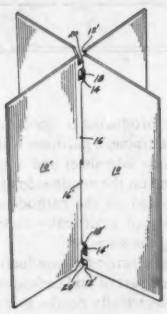
said corrugated section inside the container with relation to said flaps, and freely suspended by said tab such that opening of the flaps of the openable means of the container causes a first end section of the straw to freely pop out of the opened opening of the container.

4,194,675

PARTITION INTERLOCK CONSTRUCTION

Charles L. Peters, Jr., Norco, Calif., assignor to Box Innards, Inc., Orange, Calif.

Continuation of Ser. No. 688,049, May 19, 1976, abandoned.
This application Dec. 28, 1978, Ser. No. 973,906
Int. Cl.² B65D *5/48, 85/00*
U.S. Cl. 229—15 **3 Claims**



1. In an open partition assembly having first and second sets of strips, the strips in each set being parallel and the strips in one set being oriented at right angles to the strips in the other set, a strip and interlock construction comprising:

an elongated element for each strip having a number of spaced slots in one longitudinal edge thereof,

the slots dividing the strip into a number of segments;

respective lock tab projections adjacent said one edge extending from all but one end segment and facing said one end segment, each such projection extending through a slot;

respective lock tab projections extending from all but the other end segment and facing said other end segment and extending through a slot,

said last-mentioned projections being spaced from said one edge of the strip, whereby each slot has a pair of lock tab projections extending in opposite directions from opposite sides thereof;

and said strip having lock tab projection receiving opening

means spaced along the opposite longitudinal edge thereof and aligned with said slots,

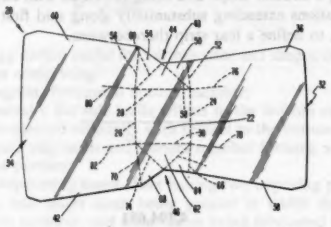
each opening means of one set of strips receiving both lock tab projections of a respective pair, whereby all segments of each strip in each set of strips of the assembly are supported by engagement of lock tab projections extending therefrom into opening means of the other set of strips.

4,194,676

LEAKPROOF CONTAINER

Richard L. Humphries, Sunnyvale, Calif., assignor to Kliklok Corporation, Greenwich, Conn.

Filed Dec. 4, 1978, Ser. No. 966,376
Int. Cl.² B65D *5/08, 3/04*
U.S. Cl. 229—16 A **3 Claims**



1. A leakproof container formed from a cut and scored blank of paperboard, comprising:

a side wall formed from a pair of side wall panels having side edges thereof secured in an overlapping relationship;

a bottom wall foldably secured at front and rear edges thereof to bottom edges of said side wall panels along a first pair of fold lines;

a pair of gusset sections foldably secured at opposite side edges of said bottom wall along a second pair of fold lines extended substantially normal to said first pair of fold lines, said gusset sections being foldably secured to said side wall panels along extensions of said first fold lines projecting outwardly beyond said side edges of said bottom wall;

each gusset section comprising a first triangular panel foldably secured to said bottom wall along one of said second fold lines at the respective side edge thereof, a second triangular panel foldably secured to one of said side wall panels along the extension of the first fold line therebetween, and a third triangular panel foldably secured to the other side wall panel along the extension of the first fold line therebetween, said second and third triangular panels also being foldably secured to said first triangular panel along convergent fold lines; and

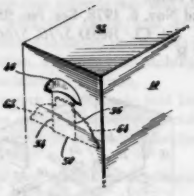
said third triangular panel having an edge extending along the extension of said first fold line located adjacent to its respective side wall panel greater in length than the corresponding edge of said second triangular panel and overlapping said second triangular panel to prevent leakage therebetween, whereby two adjacent gusset structures including said first gusset panel as a common panel are overlapped and raw edges are in nonaligned orientation with said third triangular panel and its respective side wall panel inserted between said second triangular panel and its respective side wall panel and said overlapping gussets disposed within the interior of said container along said side wall panels to provide a leakproof seal and a relatively smooth and flat exterior for said bottom wall.

4,194,677

CARTON WITH POUR SPOUT MADE FROM THE CARTON MATERIAL

Lawrence Wysocki, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 23, 1978, Ser. No. 918,488
Int. Cl.² B65D *5/72*
U.S. Cl. 229—17 R **15 Claims**



1. A carton having closeable pour spout formed in one wall, comprising:

an outer panel having an opening therethrough and an outer tab having a first end hingedly connected to the remainder of the outer panel, a second opposite end defining a portion of the perimeter of the opening and side edges connecting the first and second ends of said outer tab; and

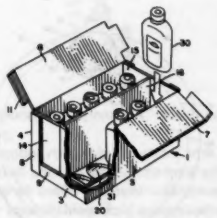
an inner panel superimposed upon and bonded to said outer panel over a part of their facing surfaces, said inner panel including an inner tab forming a spout floor, said inner tab being bonded to said outer tab, said inner tab being hingedly connected along a bottom edge thereof to said inner panel in registry with said outer tab, and first and second integral wing members hingedly connected to opposite side edges of said inner tab, the surfaces of said first and second integral wing members which abut the outer panel being coated with a glue retarding coating to prevent bonding of said outer panel thereto, said inner panel further including first and second cut-outs, with a portion of the perimeter of each said cut-out being respectively defined by the bottom edge of said first and second wing members, said wing members being deformed inwardly to thereby form spaced side walls for the spout when said inner and outer tabs are pulled outwardly.

4,194,678

SHIPPING CONTAINER AND BLANK FOR FORMING SAME

Mark F. Jasper, Laguna Hills, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 10, 1978, Ser. No. 922,956
Int. Cl.² B65D *5/32, 5/48*
U.S. Cl. 229—23 R **3 Claims**



1. A container, comprising a base member with a floor joined to two sides forming a generally U-shaped panel open at its front and rear, and a reinforcing member joined to the base member and having front and rear panel and a verticle support panel, said reinforcing member joined to the base member to

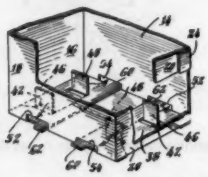
close its front and rear, and a pocketed insert secured between the base and the reinforcing member.

4,194,679

SELF-LOCKING CONTAINER

Mervin Lohrbach, Anaheim, and Richard Peeples, Placentia, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,186
Int. Cl.[2] B65D *5/10, 5/66*
U.S. Cl. 229—39 R **7 Claims**



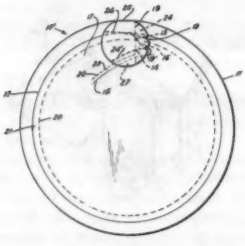
1. A self-locking container comprising:
a plurality of side walls hingedly connected to each other,
an inner bottom panel hingedly connected to a bottom edge of an opposed pair of said side walls, each of said inner bottom panels extending towards the other and including
a pair of spaced slots and being T—shaped in plan defining
a laterally extending tab along each side edge thereof,
an outer bottom panel hingedly connected to a bottom edge of each of another opposed pair of said side walls overlying a portion of each of said inner bottom panels, each of said outer bottom panels extending towards each other and including
a pair of spaced elongated tabs,
each of said elongated tabs being bendable 180° relative to its outer bottom panel and inserted through one of said slots in each of said portions of said inner bottom panels to lock said outer bottom panels to said inner bottom panels, and
a pair of spaced slots in each of said other opposed pair of side walls, each slot receiving one of said bent elongated tabs on an outer bottom panel and one of said laterally extending tabs on an inner bottom panel therethrough to lock said bottom panels to each other and said side walls.

4,194,680

OPENABLE CONTAINER COVER

Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 21, 1978, Ser. No. 972,039
Int. Cl.[2] B65D *5/54, 5/64*
U.S. Cl. 229—43 **2 Claims**



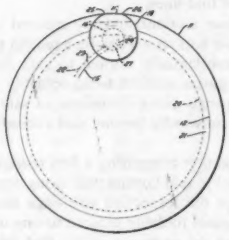
1. An openable cover adapted to span and be marginally secured to a container comprising in combination: a substantially flat paperboard sheet having a first cut score on the upper surface thereof; a second cut score on the lower surface thereof; said cut scores extending therearound and being substantially uniformly spaced from each other and from the edge of the sheet, a third cut score spaced inwardly from the first cut score on the upper surface of the sheet, a fourth cut score spaced inwardly from the second cut score on the lower surface of said sheet, the combined depths of said first and second cut scores and of said third and fourth cut scores being approximately the thickness of the sheet; an angular cut extending between and terminating in said first and third cut scores to define a pull tongue normally lying in the plane of the sheet; and a pull tab normally disposed on the upper surface over the area of said angular cut, a part of said pull tab being affixed to said pull tongue and the other part of the pull tab overlapping said angular cut to define an easy lift portion of the tab, said pull tab being a paperboard piece lying on the upper surface of the cover over and around the area of said angular cut, a part of said paperboard piece being glued to the lift tongue and a part thereof overlapping the angular cut, being without adhesives to serve as an easy lift portion, said paperboard piece having a circular shape and being provided with two series of perforations extending substantially along said first and third scores, to define a tear strip therebetween.

4,194,681

OPENABLE CONTAINER COVER

Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 21, 1978, Ser. No. 972,040
Int. Cl.[2] B65D *5/54;* **B65D** *17/24*
U.S. Cl. 229—43 **4 Claims**



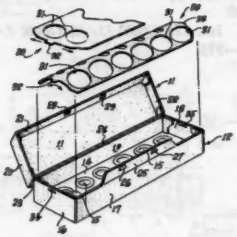
1. An openable cover adapted to span and be marginally secured to a container comprising, in combination, a substantially flat paperboard sheet having a first cut score on the upper surface thereof, a second cut score on the lower surface thereof, said cut scores extending therearound and being substantially uniformly spaced from each other and from the edge of the sheet, a third cut score on the upper surface of the sheet spaced inwardly and diverging from said first cut score to define a starting tongue therewith, a fourth cut score spaced inwardly from the second cut score on the lower surface of said sheet, a cutout area communicating with said third and first cut scores, said cutout area having a substantially circular shape and crossing said first and third cut scores, a protective tab lying on the upper surface of said cover above said cutout area and being partially glued to said upper surface, and a paperboard scrap disposed in said cutout area in the plane of said cover and connected thereto by a plurality of small nicks, said protective tab being glued directly to said scrap.

4,194,682

EGG CARTON

Wayne L. Congleton, 20780 Divonne Dr., Walnut, Calif. 91789, and Pat E. Placey, 11033 Massachusetts Ave., Los Angeles, Calif. 90025

Filed Jan. 19, 1979, Ser. No. 4,745
Int. Cl.[2] B65D *5/66, 5/50*
U.S. Cl. 229—45 EC **10 Claims**



1. An egg carton useful for various sizes and shapes of eggs, said carton comprising:

a rectangular, horizontal bottom member;

four generally flat side walls affixed to the bottom member and positioned vertically with respect to the bottom member, said side walls and bottom member forming a lower carton portion;

an egg-supporting insert sheet having two opposing parallel sides, said insert sheet being greater in width than the bottom member, said insert sheet being fabricated from a stiff piece of flexible material so that the sheet may be arched for insertion into the lower carton portion, the amount of the flexure being such that the uppermost portion of the insert sheet is between 45% and 65% of the total height of the egg carton, said insert sheet having a plurality of holes formed therein for insertion of eggs; and

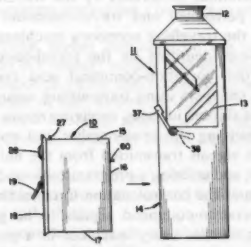
an upper carton portion, said upper carton portion having a rectangular, horizontal top member and four generally flat side walls positioned to be co-planar with the corresponding side walls of the lower carton portion when the upper carton portion is in a closed configuration.

4,194,683

COIN VAULT

Theodore R. Finke, Euclid, and Edward M. Mavko, Madison, both of Ohio, assignors to The Euclid Products Co., Inc., Willoughby, Ohio

Continuation of Ser. No. 885,352, Mar. 13, 1978. This application Dec. 27, 1978, Ser. No. 973,577
Int. Cl.[2] G07B *15/00*
U.S. Cl. 232—15 **14 Claims**



1. A vault for coins, tokens, and the like, adapted to be locked in a receiving apparatus and removed therefrom with coins, tokens, and the like, locked therein comprising

means defining a vault chamber with an opening at the top thereof for receiving coins, and the like, from said receiving apparatus,

a hinged door in said vault chamber movable between a closed position and an inwardly extending open position for permitting transfer of coins, and the like, from said receiving apparatus to said vault chamber,

catch means on said door,

a locking lever having an operating arm and a latch-carrying arm with a latch that extends into said vault chamber and is cooperable with said catch, said locking lever being movable between a latching position to lock said door in its closed position, a primary unlatching position and an intermediate unlatching position,

resilient means urging said lever to said latching position,

first detent means movable between a detaining position for holding said lever in its primary unlatching position and a retracted position,

resilient means urging said first detent means to said detaining position,

second detent means movable between a depressed detaining position for holding said lever in its intermediate unlatching position and for simultaneously moving said first detent means to its retracted position, and an extended position,

resilient means urging said second detent means to its extended position,

said second detent means being depressed when said vault is placed in said receiving apparatus to detain said lever in said intermediate unlatching position, and

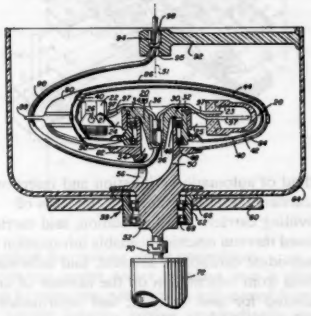
unlocking means for moving said lever from its latching position to its primary unlatched position when said coin vault is removed from said coin-receiving apparatus.

4,194,684

CENTIFUGAL APPARATUS USING POLYESTER ELASTOMER TUBING

Daniel R. Boggs, Vernon Hills, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 13, 1977, Ser. No. 805,951
Int. Cl.[2] B04B *5/02*
U.S. Cl. 233—26 **7 Claims**



1. Centrifugal processing apparatus, which comprises:

a stationary base;

a processing chamber rotatably mounted with respect to said base for rotation about a predetermined axis;

a flexible umbilical cable segment comprising a polyester elastomer for estabilishing fluid communication with said processing chamber, one end of said cable segment being fixed with respect to said base substantially along said axis at one side of said processing chamber, the other end of said cable segment being attached substantially on said axis in rotationally locked engagement to said processing chamber;

means for rotating said fluid processing chamber and said

cable segment in the same direction with a speed ratio of 2:1, respectively;

an outer enclosure positioned about said processing chamber and being symmetrically dimensioned about said axis;

means rotatably coupling said outer enclosure to said processing chamber, permitting said outer enclosure to rotate at one-half the speed of said processing chamber; and

said outer enclosure being positioned intermediate said processing chamber and said cable segment.

4,194,685

VERIFYING INSERTION SYSTEM APPARATUS AND METHOD OF OPERATION

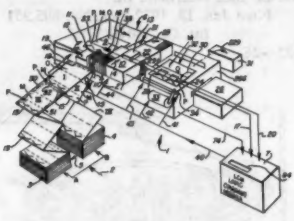
James E. Hill, Prospect Heights; Baesley I. Dahlstrom, Des Plaines, and Robert D. Fisher, Melrose Park, all of Ill., assignors to Dynetics Engineering Corp., Wheeling, Ill.

Continuation-in-part of Ser. No. 768,446, Feb. 14, 1977, abandoned, which is a division of Ser. No. 615,112, Sep. 19, 1975, Pat. No. 4,034,210. This application Sep. 9, 1977, Ser. No. 832,001

Claims priority, application Canada, Sep. 17, 1976, 261445; United Kingdom, Sep. 20, 1976, 38812/76

Int. Cl.[2] G06F *15/20*; B65B *1/00*; B41F *13/56*

U.S. Cl. 235—375 58 Claims



1. Method of automatic verification and insertion of credit cards in carriers therefor comprising the steps of:

(a) providing carriers to a first station, said carriers having disposed thereon machine readable information relating to an individual cardholder account, said information being selected from information on the number of credit cards authorized for said account, and information uniquely identifying said cardholder or account,

(b) machine reading at least a portion of said information on said carriers in said frist station,

(c) providing credit cards to a second station, said cards having thereon machine readable information relating to an individual cardholder or account,

(d) machine reading said information on said cards in said second station,

(e) sequentially comparing said card information with said carrier information until a condition of matched information is produced,

(f) inserting the correct number of properly matched cards into the appropriate carrier in response to said matched information condition.

4,194,686

METHOD OF MONITORING AND CONTROLLING THE TRAVEL AND OPERATION OF THE TRAVELLING ACCESSORY MACHINES IN A COKING INSTALLATION

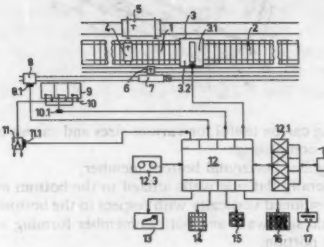
Jürgen Richter, Mülheim; Alois Purrer, Erlangen, and Werner Eisenhut, Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH and Bergwerksverband, both of Essen, Fed. Rep. of Germany

Filed Oct. 20, 1977, Ser. No. 843,794

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648049

Int. Cl.[2] G06F *15/46*; G06K *7/08*

U.S. Cl. 235—376 9 Claims



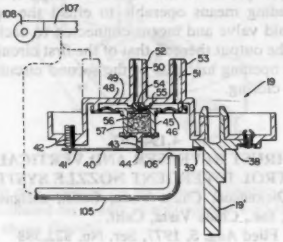
1. In a method of controlling the individual operations performed by the travelling accessory machines which travel along the ovens of the coke-oven battery of a coking installation, in combination, the steps of locating coded structures along the length of the travel paths of the travelling accessory machines at the individual ovens of the coke-oven battery, each coded structure at an individual coke oven containing coded information indicative of the oven-number of the respective oven of the battery; providing the travelling accessory machines with code readers operative when the respective accessory machine is moved to an individual coke oven for reading the coded information on the coded structure at the oven and generating and transmitting an oven-number feedback signal indicative of the oven-number of the oven; providing the travelling accessory machines with means operative for generating and transmitting operation-completed feedback signals when individual operations performed by the travelling accessory machines are completed; providing the accessory machines and their motive drive means with receivers for reception of operation-command signals commanding that individual operations performed by the travelling accessory machines be performed and travel-command signals commanding that the travelling accessory machines be moved to individual ovens identified by the travel-command signals; transmitting the operation-command and travel-command signals to the receivers using transmitting means located at a remote control station; utilizing receiving means at the control station for receiving the oven-number and operation-completed feedback signals transmitted from the individual accessory machines; and utilizing a programmable and programmed control system at the control station to cause the travel-command and operation-command signals to be generated and transmitted to the accessory machines in a preprogrammed sequence, the preprogrammed sequence including interlocks which prevent the generation and transmission of at least some of the command signals until after predetermined ones of the feedback signals transmitted from the accessory machines have been received.

4,194,687

PNEUMATIC CONTROL SYSTEM AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

Douglas R. Scott, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 27, 1977, Ser. No. 864,455
Int. Cl.[2] G05D *23/08*
U.S. Cl. 236—87 14 Claims



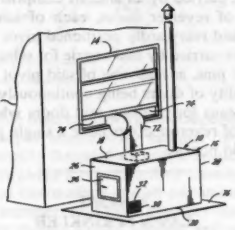
1. In a pneumatic control system for controlling a pneumatically operated device in relation to the operation of a pneumatic signal sending themostat and a pneumatic signal sending set point adjuster that has setting means for selecting the value of the pneumatic signal thereof, said set point adjuster having a temperature sensor for changing said setting means in relation to sensed temperature thereof, said setting means including an adjustable spring member, the improvement wherein said spring member also comprises said temperature sensor.

4,194,688

METHOD OF AND APPARATUS FOR PROVIDING SUPPLEMENTAL HEAT TO BUILDINGS

Charles R. Cobos, 4500 Elaine St., Bryan, Tex. 77801

Filed Mar. 10, 1978, Ser. No. 885,315
Int. Cl.[2] F24D *5/00*; F24H *3/02*
U.S. Cl. 237—53 1 Claim



1. A heating system comprising a building to which heat is to be supplied:

a box-like metal shelter postioned on top of the ground adjacent to but entirely outside said building;

a furnace postioned within said shelter and spaced from the interior walls of said shelter thereof to provide an open space between the shelter and furnace for air to flow to be heated by contact with the heated exterior walls of the furnace;

said shelter having a cold air inlet in its lower portion through which air from outside said building can flow into said space to be heated;

an air duct connected to an air outlet at an upper portion of said shelter and to the building through a window therein to conduct heated air from said space into said building;

said furnace having an air inlet thereto through which combustion air can flow into the furnace and an exhaust stack communicating with said furnace and extending to the exterior of the shelter to discharge combustion gases to the atomsphere;

an access door in a side wall of said furnace which when open permits solid fuel to be added to the furnace from the exterior of the shelter and ashes to be removed from the furnace to the exterior of the shelter, all without carrying said fuel and ashes through the building;

said air inlet is provided in a side wall of the shelter near the bottom thereof and wherein said duct is connected to an opposite side wall near the top thereof;

a reflective linging provided on the inside of the top, bottom and side walls of said shelter for reflecting radiant energy emitted from said furnace; and wherein said shelter is constructed from an insulating material to aid in preventing heat loss through said shelter;

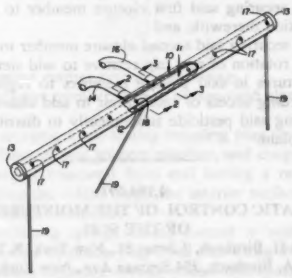
a damper connected to said furnace covering an opening beneath a grate for controlling the flow of combustion air through the opening; and a thermostat operably connected to said damper provided within said shelter at substantially the same height as the outlet for regulating the draft to the solid fuel in response to the temperature of the heated air passing out of said shelter.

4,194,689

METHOD AND APPARATUS FOR MAKING SNOW

Robert M. Ash, P.O. Box 277, Banner Elk, N.C. 28604

Filed Sep. 19, 1978, Ser. No. 943,808
Int. Cl.[2] A01G *15/00*; E01H *13/00*
U.S. Cl. 239—2 S 11 Claims



11. A method for making snow comprising:

(a) introducing water under pressure into a closed inner tubular housing mounted within and spaced from a closed outer tubular housing having longitudinally spaced discharge orifices in a side thereof,

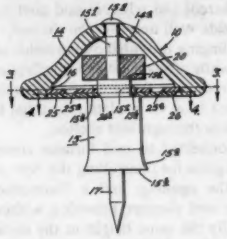
(b) concomitantly with the introduction of said water introducing air under pressure between said inner tubular housing and said outer tubular housing with said air flowing outwardly in generally parallel columns through said discharge orifices, and

(c) discharging said water from said inner tubular housing into the axial center of each column of air flowing outwardly through each said discharge orifice whereby the water and air passing through and discharged from said orifices travel in the same direction and the flow of air through said orifices is retarded to reduce the volume of air per volume of water passing therethrough.

4,194,690
BUG-BOPPER

Carole A. Stever, and Robert L. Stever, both of Nine Ledum Run, West Grove, Pa. 19390

Filed Apr. 25, 1978, Ser. No. 899,816
Int. Cl.[2] A61L 9/04
U.S. Cl. 239—57 5 Claims

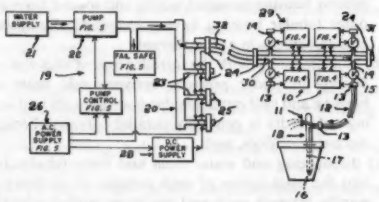


1. A device for use in controlling pests on a growing plant, comprising:
a cap having an interior chamber with an open bottom,
a torroid of pesticide disposed in said chamber,
first and second apertured closure members disposed across the bottom of said cap with said first closure member superimposed on said second and each having apertures adapted to register with one another upon relative rotation,
a stem for supporting said cap on a surface adjacent said plant with said open bottom spaced from said surface,
said stem having an upper shoulder in said chamber supporting said toroid and a pin projecting upwardly through said toroid and being upset downwardly toward said cap for rotatably mounting said cap to said stem,
said stem also having a lower shoulder engaging the underside of said second closure member,
means securing said first closure member to said cap for rotation therewith, and
means securing said second closure member to said stem so that rotation of said cap relative to said stem causes the apertures in said closure members to register, thereby affording access of ambient air to said chamber for contacting said pesticide subsequently to distribute it about the plant.

4,194,691
AUTOMATIC CONTROL OF THE MOISTURE CONTENT OF THE SOIL

Lawrence H. Birnbach, 7 Jones St., New York, N.Y. 10014, and Curtis A. Birnbach, 254 Seaman Ave., New York, N.Y. 10034

Continuation-in-part of Ser. No. 740,886, Nov. 11, 1976, abandoned. This application Nov. 29, 1978, Ser. No. 964,706
Int. Cl.[2] B05B 12/04
U.S. Cl. 239—63 19 Claims

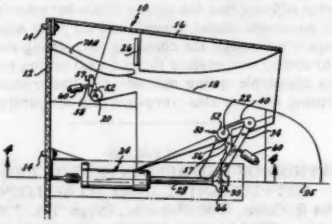


1. A moisture sensing control for a valve in a conduit by which the soil in an area is watered, said control including a pair of contacts to be inserted in the soil, first and second circuits, and input leads, one lead including a voltage divider, said voltage divider comprising a resistor string and a capacitor, leads of substantial length connecting said contacts to said one input lead across the capacitor, said string including first and second adjustable resistors, the first establishing a dry threshold and providing an input for the first circuit and the second establishing a wet threshold and an input for the second circuit, each circuit including a Schmitt trigger and means operable in response to the threshold that circuit monitors to deliver shaped pulses to the associated trigger, and a third circuit including means operable to effect the opening and closing of said valve and means connected to each trigger to respond to the output thereof, that of the first circuit trigger to effect valve opening and that of the second circuit trigger to effect valve closing.

4,194,692
FLIGHT THRUST REVERSER AND VERTICAL THRUST CONTROL DIVERGENT NOZZLE SYSTEMS

Robert A. Dickenson, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 5, 1977, Ser. No. 822,388
Int. Cl.[2] B64C 15/06; B64D 33/04
U.S. Cl. 239—265.39 8 Claims



1. An integrated divergent and thrust reversing nozzle for controlling the exhaust exit gases from a thrust producing jet aircraft engine carried by an aircraft comprising:
a plurality of reverser doors, each of said doors having forward and rearwardly positioned pivot pins;
socket means carried by said nozzle for selectively engaging said pivot pins, at least one of said pivot pins of each of said plurality of doors being continuously engaged; and
actuation means for pivoting said doors when each of said plurality of reverser doors have a single pivoted connection to said nozzle.

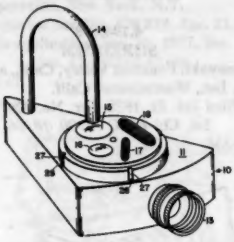
4,194,693
LAWN SPRINKLER

Thomas L. Mikulesky, 6914 W. Palo Verde Dr., Glendale, Ariz. 85303, assignor to Penny R. Mikulesky, Glendale, Ariz.

Filed Mar. 27, 1978, Ser. No. 890,034
Int. Cl.[2] B05B 1/26
U.S. Cl. 239—390 7 Claims

1. A lawn sprinkler comprising:
a base having a water conducting channel extending longitudinally therein, said channel having water inlet means and water outlet means, a water hose coupling engaged with the water inlet means, said base having a top and bottom with the bottom adapted to rest on a lawn surface;
a water distribution plate mounted on the top of said base and having a plurality of water distribution concavities in the upper surface thereof with each of said concavities being of a different vertical and horizontal cross-section, said water distribution plate mounted to said base by a shaft pin which extends through the plate and engages in the base; and
a water conduit having a first end engaged with said water outlet means and a second end opening directly over one

of the water distribution concavities whereby when water connection is made to the hose coupling, water will flow through the channel and conduit, out the open end of the



conduit and impinge on the one distribution concavity to be distributed on a lawn in accordance with the cross-sectional shape thereof.

4,194,694

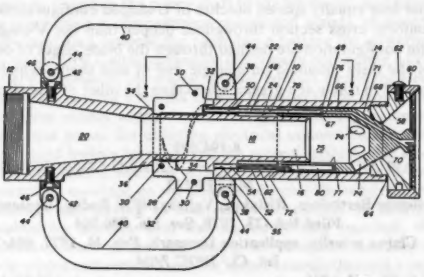
FLUID CONTROL VALVE

Frederick R. Hickerson, R.D. 6, Box 602, Newton, Sussex County, N.J. 07860

Continuation-in-part of Ser. No. 773,987, Mar. 3, 1977, abandoned. This application Apr. 18, 1978, Ser. No. 897,304

Int. Cl.[2] B05B *1/30*

U.S. Cl. 239—533.1 **4 Claims**



1. An adjustable fluid control valve comprises:

a tubularly shaped nozzle body member having a venturi shaped internally threaded aft end, a cylindrically shaped internally threaded fore end, a flow chamber section axially disposed intermediate said aft end and said fore end of said body member, said flow chamber section having a flow cavity therein axially aligned and communicating with a venturi shaped chamber in said aft end, a cantilever flow chamber section being separated from the interior wall of said nozzle body member by an annularly shaped piston groove, a longitudinally disposed control pin bore operatively positioned in said nozzle body member having one end communicating with said annularly shaped piston groove, a stepped cam annular groove circumferentially disposed on said nozzle body member intermediate said aft end and said fore end, an alignment pin counterbore longitudinally disposed in said nozzle body member, said alignment pin counterbore communicating with said annularly shaped piston groove, and a nozzle forward chamber located in said nozzle body member fore end;

valve means slidably positioned in said cylindrically shaped fore end of said nozzle body member for controlling the rate of fluid flow through said nozzle body member, said valve means providing fluid pressure relief to balance the forces exerted on a front and rear end of said valve means at a selected fluid flow rate which includes;

a piston shaped valve member having a conically shaped front end and an open rear end, said rear end loosely fitting into said annularly shaped piston groove, said front end having a plurality of vent orifices therein which communicates with said nozzle forward chamber of said nozzle body member and a pressure relief passage having a front end passing through and exiting from said piston valve member front end, a control pin piston bore longitudinally disposed in the open rear end having a control pin seat end which communicates with the other end of said pressure relief passage, and an alignment pin piston counterbore longitudinally disposed in said open rear end diametrically located opposite to said control pin piston bore;

cam means rotably positioned on said nozzle body member for adjustably regulating the position of said piston shaped valve member to infinitely control fluid flow through said nozzle body member from a full on position to a full closed position; and

spray deflector means threadedly attached to said threaded fore end of said nozzle body member for providing a nozzle seat for said piston shaped valve member, and for generating a variable fluid spray pattern therefrom.

4,194,695

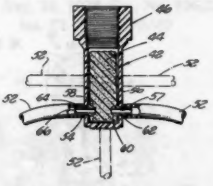
IRRIGATION EMITTER SYSTEM

Edgar Schopp, 2210 Gratton St., Riverside, Calif. 92504

Filed May 15, 1978, Ser. No. 905,594

Int. Cl.[2] B05B *15/00*

U.S. Cl. 239—542 **5 Claims**



1. An irrigation emitter system comprising:

a tubular adapter member formed of non-rigid plastic material;

means for securing a self-sealing coupling plug through the wall surfaces of said adapter member, said coupling plug comprising a truncated front end having a rearwardly facing shoulder which abuts the interior surface of said tubular adapter member;

pressure reducing sponge means formed in said adapter member, said coupling plug front end being forced into said pressure reducing sponge means, said sponge means exerting a sealing force on said coupling plug when liquid enters said adapter member; and

means for coupling plastic hose to water flowing through said adapter plug.

4,194,696

ELECTROSTATIC SPRAY COATING GUN

Martin J. Harjar, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 705,338, Jul. 14, 1976, Pat. No. 4,079,894. This application Nov. 3, 1977, Ser. No. 848,042

Int. Cl.[2] B05B *5/00*

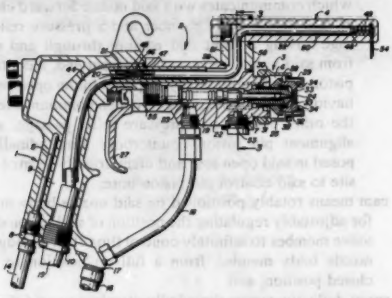
U.S. Cl. 239—707 **5 Claims**

1. An electrostatic spray coating gun comprising:

means to form and discharge a stream of coating material which breaks up into droplets;

means to apply an electrical charge to the coating material prior to deposition on a substrate, wherein the means to apply the charge to the coating material comprises an

electrode located externally of the paint gun and which is resiliently flexible for substantially its whole length; and



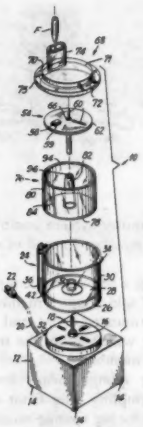
a short needle-like electrically conductive portion of the electrode at an exterior end thereof.

4,194,697

FOOD PROCESSOR AND AUXILIARY MIXING BOWL THEREFOR

William Lembeck, 54 Continental Ave., Forest Hills, N.Y. 11375

Filed Jan. 22, 1979, Ser. No. 5,333
Int. Cl.[2] B02C *18/16*
U.S. Cl. 241—92 **17 Claims**



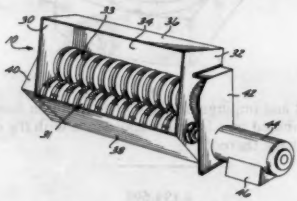
1. A food processor comprising, in combination:
an electric motor having a drive shaft,
cutting tool means including a food processing blade portion having an integrally formed driven shaft,
said driven shaft being coupled to said drive shaft for rotation therewith,
an outer bowl having a basewall including an opening through which said drive shaft extends and a side wall extending upwardly from said basewall,
an inner bowl removably nested within said outer bowl for receiving therein the food to be processed by said blade portion,
said inner bowl including a sidewall and a basewall having a tubular post,
at least a portion of said tubular post being positioned in close proximity about said driven shaft of said cutting tool means and terminating adjacent the underside of said cutting tool means to thereby minimize the passage of processed food through said opening in said basewall of said outer bowl, whereby said motor is not contaminated by said processed food, and
cover means removably coupled to said outer bowl.

4,194,698

SHREDDER

Wojciech Kosmowski, Fountain Valley, Calif., assignor to American Delphi, Inc., Westminster, Calif.

Filed Jul. 21, 1978, Ser. No. 926,798
Int. Cl.[2] B02C *18/00, 18/06*
U.S. Cl. 241—236 **8 Claims**



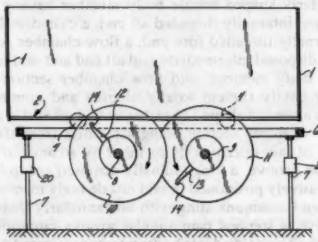
1. In a shredding apparatus employing a pair of counterrotating shafts each having a plurality of disks mounted thereon at spaced intervals in interleaved arrangement each disk having opposing transverse faces with an encircling rim the improvement wherein the rim of each said disks is configured in a V-shaped cross section, thereby forming arcuate blade edges of acute angles at the perimeter of each of said transverse faces, and four equally spaced notches of U-shaped configuration of uniform cross section throughout deeper than the V-shaped rim configuration are defined through the blade edges of each of the disks mounted on a single one of said shafts, which is geared to rotate at a greater speed than the other of said shafts.

4,194,699

APPARATUS FOR CUTTING UP AND CONVEYING MATERIAL

Mogens Berthelsen, Rislykke, Vejleby, 4970 Rodby, Denmark

Filed Feb. 23, 1978, Ser. No. 880,544
Claims priority, application Denmark, Feb. 24, 1977, 804/77
Int. Cl.[2] B02C *7/04*
U.S. Cl. 241—236 **20 Claims**



1. Apparatus for processing material comprising a container for material to be processed, an opening to the interior of the casing through which material to be processed is delivered, a discharge opening from the container from which processed material exits the container, cutting means disposed to cut parallel grooves in material contained in the container adjacent the discharge opening thereof, conveying means movable to engage cut material between said grooves and convey said cut material to said discharge opening and means for causing said container and cutting means to be reciprocated relative to each other to cause said grooves to be cut.

4,194,700

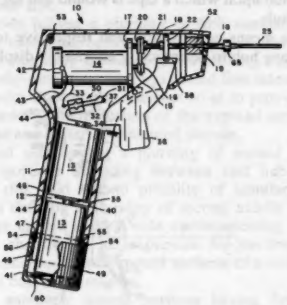
BATTERY-POWERED WIRE WRAPPING TOOL AND WRAPPING BIT

Marvin Kober, Spring Valley, N.Y., assignor to O.K. Machine and Tool Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 679,519, Apr. 23, 1976, Pat. No. 4,064,581. This application Jan. 24, 1977, Ser. No. 761,768

Int. Cl.[2] B21F *15/04*

U.S. Cl. 242—7.17 **4 Claims**



1. A battery-powered portable wire wrapping tool comprising a housing formed substantially in two halves, an electrical motor mounted within the housing and having a motor shaft, a bit driver mounted for rotation within the housing, means drivingly coupling the motor shaft to the bit driver, said housing comprising a compartment constituted mainly of electrically insulating material for receiving a battery for powering the motor, first contact means for electrically connecting a first battery terminal to the motor, second contact means for electrically connecting a second battery terminal to the motor and extending mainly along the interior of the battery compartment, and means for effecting electrical connection between the second battery terminal and the second contact, said electrical connection effecting means comprising an external cap removably mounted on the housing adjacent the battery compartment and having an electrically conductive surface for establishing contact with the second battery terminal, the second contact means comprising an elongated conductive strip whose end remote from the motor extends through a wall portion of the battery compartment adjacent the cap to the housing exterior, and a removable retaining ring provided at the battery compartment and encircling the housing halves to secure them together, said retaining ring being conductive and engaging and electrically contacting the remote end of the conductive strip while in its retaining position, said cap being configured such that when secured to the housing it engages and electrically contacts the conductive retaining ring with its conductive surface.

4,194,701

ROLL STAND WITH MEANS FOR JOINING A WEB TO ANOTHER WHEN UNWOUND FROM ROLLS

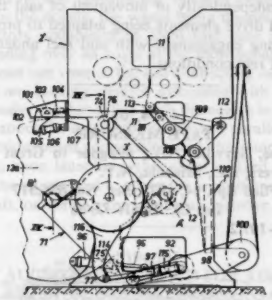
Bengt A. Andreåsson, Åmål, Sweden, assignor to AB Amals Mekaniska Verkstad, Sweden

Filed Oct. 11, 1978, Ser. No. 950,449

Int. Cl.[2] B65H *19/14*

U.S. Cl. 242—58.3 **6 Claims**

1. An improved roller stand comprising a frame, two unwinding stations, a first roll of a web of material, a first rotating spindle supporting said first roll, a second roll of a web of material, a second rotating spindle supporting said second roll, means for joining the web of material being unwound from said first roll to the leading end of the web of material of said second roll, means arranged to transversely cut said first web of material, and a braking mechanism supported by the frame of the roller stand to exert a braking force an said roll support spindles, the improvement comprising a roll-holding device, said two unwinding stations positioned on said roll-holding device, and means to transfer the rotational movement of the associated roll-support spindle to said braking mechanism, said



means comprising two free-wheel members, one for each roll support spindle, said members arranged to connect to said braking mechanism that one of said two roll support spindles that at the moment has the highest rotational speed.

4,194,702

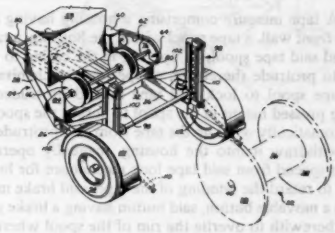
POWER REEL RETRIEVER

Andy M. Ploeg, 1825 Cook Rd., Burlington, Wash. 98233

Filed Aug. 24, 1978, Ser. No. 936,228

Int. Cl.[2] B65H *75/40*

U.S. Cl. 242—86.5 R **25 Claims**



9. An apparatus to carry a reel, said reel having a drum portion having a relatively small diameter and retaining flange members having a relatively larger diameter affixed to either end of said drum portion, said apparatus adapted to retrieve and pay out cable from said reel, said apparatus comprising:

a. a base frame having a forward end and a rear end, and longitudinal and transverse axes,

b. a second reel supporting frame mounted to said base frame

c. a reel lifting and carrying device mounted to said second frame, said device being adapted to vertically lift said reel from a first lower position to a second upper operative position,

d. a movable third frame operatively connected to said base frame and adapted for movement from a forward disengaged position to a rearward engaged position along said longitudinal axis of said base frame,

e. a reel drive mechanism, comprising transversely spaced drive elements having rotating friction drive surfaces adapted and positioned to frictionally engage said reel to cause said reel to rotate, said drive elements being mounted to said third frame,

f. actuating means adapted to move said third frame from said disengaged position to said engaged position where said drive surfaces engage said reel,

g. said reel lifting and carrying device being mounted to said

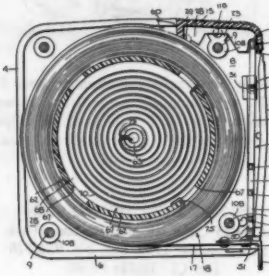
second frame, such that movement of said lifting and carrying device is vertical relative to both said second and third frames, whereby, upon actuation of said actuating means, said third frame is moved rearwardly, such that said drive elements engage said reel, and said reel can be moved independently of movement of said third frame, with said drive elements being adapted to provide effective driving engagement with said reel under loaded or unloaded reel conditions.

4,194,703

TAPE MEASURE

Justus G. Roe, Sayville, N.Y., assignor to Great Neck Saw Manufacturers, Inc., Mineola, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,317
Int. Cl.[2] B65H *75/48*
U.S. Cl. 242—107.2 **9 Claims**



1. A tape measure comprising a housing having a top wall and a front wall, a tape spool within the housing, a tape wound around said tape spool, an opening in the casing to permit the tape to protrude therefrom, a tape lock mechanism adjacent the tape spool to lock said tape in said protruded position, spring pressed means in the spool to permit the spool to rotate to automatically wind-up the tape from said protruded position and withdraw it into the housing, manually operable brake means spaced from said tape lock mechanism for braking said spool to retard the winding of the tape, said brake means comprises a movable button, said button having a brake pad associated therewith to overlie the rim of the spool whereby movement of said button in one direction will cause the brake pad to strike said rim and said button connected to the tape lock mechanism so that movement in one direction will lock the tape in place and movement in the other direction will release the tape.

4,194,704

AUTO SHUT-OFF APPARATUS FOR CASSETTE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1978, Ser. No. 895,703
Claims priority, application Japan, Apr. 27, 1977, 52-53867
Int. Cl.[2] G11B *15/24*
U.S. Cl. 242—191 **13 Claims**

1. Auto shut-off apparatus for a cassette tape recorder comprising:

a base plate;

a capstan supported for rotational movement upon said base plate;

a pinion being rotatably mounted upon said base plate in coaxial alignment with said capstan and being rotated in unison with said capstan;

an operating member;

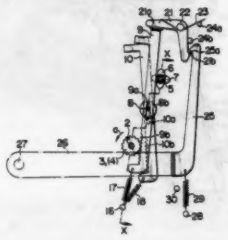
first and second rack levers both normally occupying a first position displaced from said operating member and having a rack portion adapted to meshingly engage said pinion to be linearly moved towards said operating member;

common pivot means for movably mounting said first and second rack levers upon said stationary base plate;

said first and second rack levers each including a slot cooperating with said pivot means for enabling its associated rack lever to experience swingable and linear movement about said pivot means;

said recorder having at least one shaft adapted to support a tape hub upon which a tape is wound and for rotating said tape hub;

resetting means coaxial with and responsive to rotation of said tape hub to periodically alternately displace said first



and second rack levers from meshing engagement with said pinion to thereby return each rack lever to its said first position;

means responsive to a tape end being reached to terminate rotation of said tape hub and hence disable said resetting means, enabling at least one of said rack levers to be linearly moved by said pinion towards said operating member without interruption;

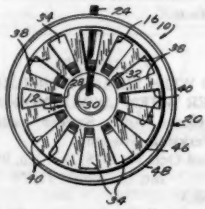
said recorder operating member having a first position for maintaining the recorder in operation and responsive to engagement by one of said rack levers for terminating operation of said recorder when said operating member is displaced from said first position by said one of said rack levers.

4,194,705

DESOLDERING WICK PACKAGE AND IMPROVED BOBBIN UTILIZED THEREIN

Ernst Spirig, Movenstrasse 37, CH-8640 Rapperswil, Switzerland

Filed Sep. 29, 1978, Ser. No. 947,841
Int. Cl.[2] B65H *49/18*
U.S. Cl. 242—137 **9 Claims**



1. A device for containing a length of strand material in a coil formation having a cross-sectional configuration with a dimension measured in the axial direction which is substantially greater than the smallest transverse dimension of the strand material and for controllably dispensing successive free end portions thereof comprising

a unitary annular body molded of plastic material defining an

annular chamber of a size to receive therein the coil of strand material and a continuous annular slot communicating with the outer periphery of said annular chamber of a size to permit the free end portion of the strand material to extend therethrough in controllably engaged fashion,

said body including a central hub, first and second sides extending generally radially outwardly from said hub in axially spaced relation with respect to one another, and

first and second continuous rims at the radially outward ends of said first and second sides respectively defining said continuous slot,

said first side having a plurality of first annularly spaced portions extending between said hub and said first rim, said first annularly spaced portions defining a plurality of first axially extending openings in said first side communicating with said annular chamber so as to provide for the free exterior communication of the exposed surfaces of a coil of strand material contained therein,

said second side having a plurality of second annularly spaced portions extending between said hub and said second rim, said second plurality of annularly spaced portions defining a plurality of second axially extending openings in said second side communicating with said annular chamber so as to provide for the free exterior communication of the exposed surfaces of a coil of strand material contained therein,

said first annularly spaced portions having first interior surfaces defining closed portions of the first side of said annular chamber all of which are axially accessible through said second openings,

said second annularly spaced portions having second interior surfaces defining closed portions of the second side of said annular chamber all of which are axially accessible through said first openings.

4,194,706

DEVICE FOR IMPARTING A MOVEMENT OF ROTATION TO A CRAFT WHEN IT IS LAUNCHED

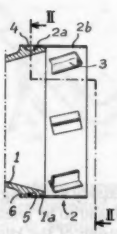
Bernard Detalle, L'Hay-les-Roses, France, assignor to Societe Europeene de Propulsion, Puteaux, France

Filed Apr. 13, 1978, Ser. No. 896,010

Claims priority, application France, Apr. 21, 1977, 77 12070

Int. Cl.[2] F42B *13/22*

U.S. Cl. 244—3.23 **5 Claims**



1. A device for imparting a movement of rotation to a craft with nozzle propulsion system during launching thereof by means of a launching member, said device comprising: a wheel with vanes or fins formed by a section of tube located in the rear extension of the nozzle, the tube section having an outer surface at least partly in permanent contact with the launching member during its path inside said latter, and bearing, on the inside, vanes or fins constituting surfaces deflecting the jet produced by the nozzle, the wheel being divided into distinct annular sectors juxtaposed to form said tube section, each sector extending over an angle at the most equal to 180°, and bearing at least one vane or fin; and connecting means comprising at least one locking element associated with each annular sector to render this latter fast with the nozzle in the direction of rotation about the axis of the nozzle and parallel to this axis, said connection means cooperating with the launching member to maintain, upon launching, the wheel in fixed position with respect to the nozzle, and to allow the separation of said device and the craft, on leaving the launching member.

4,194,707

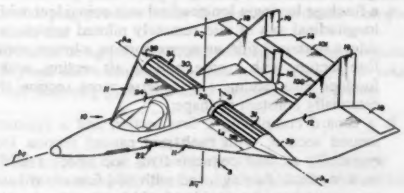
LIFT AUGMENTING DEVICE FOR AIRCRAFT

Thomas H. Sharpe, 502 Dorr Ave., Belvedere, S.C. 29841

Filed Dec. 16, 1977, Ser. No. 861,269

Int. Cl.[2] B64C *29/00, 39/00*

U.S. Cl. 244—9 **9 Claims**



2. A lift augmenting device for an aircraft having a longitudinal flight axis along which the aircraft flies and a pilot cockpit; defining a pair of air intake ducts therein on opposite sides of the aircraft flight axis having forwardly facing air intakes thereto and a rear end; and including forward propulsion means operatively associated with the rear ends of the air intake ducts for generating forward thrust to propel the aircraft forwardly along the aircraft flight axis; said lift augumenting device comprising:

a pair of rotor assemblies positioned on opposite sides of the aircraft flight axis and rotatable about generally horizontal rotor axes, one of said rotor assemblies communicating with each of said air intake ducts between the air intake thereto and the rear end thereof and with the air below the aircraft so that each rotor assembly can selectively pump air from within the duct to below the aircraft;

closure means for selectively closing the air intakes to the air intake ducts; and

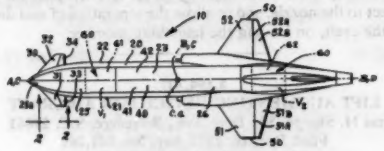
louver means for selectively connecting each of the air intake ducts between the air intake thereto and the rear end thereof to the air above the aircraft so that, when said closure means closes the air intakes and said louver means connects the air intake ducts to the air above the aircraft, said rotor assemblies can pump air from above the aircraft through the air intake ducts to below the aircraft to generate lift on the aircraft.

4,194,708

REMOTELY PILOTED VEHICLE

Daniel J. Tracy, Maple Valley; John P. Palmer, Seattle, and Daniel J. O'Brien, Kirkland, all of Wash., assignors to The United States of America as represented by the Secretray of the Air Force, Washington, D.C.

Filed Sep. 21, 1978, Ser. No. 944,441
Int. Cl.[2] B64C *15/02*; B64D *1/06*
U.S. Cl. 244—15 **4 Claims**



1. A remotely piloted vehicle, having a center of gravity and a longitudinal axis, comprising:

a. a fuselage having a longitudinal axis coincident with said longitudinal axis of said remotely piloted vehicle, a port side, a starboard side, an upper portion, a lower portion, a fore section with a nose, and an aft section, with said fuselage also having a transverse cross section that is essentially constant in shape;

b. a canard comprising a first section and a symmetrical second section, with each said canard section located essentially at, and connected to, said nose of said fore section of said fuselage, and with said first canard section connected to said port side of said fuselage, and with said second canard section connected to said starboard side of said fuselage and oppositely disposed with relation to said first canard section, wherein said canard includes a first elevator section pivotally connected to said first canard section, and a symmetrical second elevator section pivotally connected to said second canard section; and wherein said first canard section and said second canard section are each simultaneously movable from zero degrees to 5 degrees upwardly in relation to said coincident longitudinal axes of said fuselage and of said remotely piloted vehicle, and wherein said first elevator section and second elevator section of said canard are each simultaneously pivotable downwardly from zero degrees to 40 degrees in relation to said coincident longitudinal axes of said fuselage and of said remotely piloted vehicle;

c. a weapons bay located at said center of gravity of said remotely piloted vehicle and internal of, and having a closeable opening in, said upper portion of said fuselage, whereby a store releasably held within said weapons bay can be delivered by, and can be selectively released from, said remotely piloted vehicle when said vehicle is in flight in an inverted position, wherein said weapons bay includes two identical, simultaneously openable, and simultaneously closeable doors, wherein said doors are sized to completely close said opening of said weapons bay, whereby said closeable opening of said weapons bay is selectively, and remotely, closeable by an inward movement of said doors, and is openable by an outward movement of said doors; and wherein said weapons bay has a geometric center, and said center of gravity of said remotely piloted vehicle is located at said geometric center of said weapons bay;

d. a wing comprising a first section and a symmetrical second section, with each said wing section having a trailing edge with an elevon thereat, and with each said wing section simultaneously located at and connected to said aft section and said lower portion of said fuselage, and also with said first wing section simultaneously connected to said port side of said fuselage, and also with said second wing section simultaneously connected to said starboard side of said fuselage;

e. fuel tankage disposed within said fuselage, with said tankage also simultaneously disposed such that an equal volume of said tankage is positioned both fore, and aft, of said center of gravity of said remotely piloted vehicle, wherein said fuel tankage includes a first and a second main fuel tank, and wherein said first main fuel tank is disposed forward of said weapons bay, and also therein second main fuel tank is disposed aft of said weapons bay, and further wherein said fuel tankage further includes a fuel bay disposed under said weapons bay, and interconnecting, said first and said second main fuel tanks;

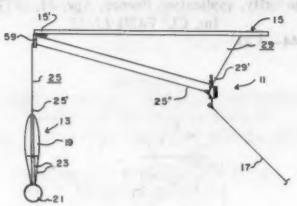
f. and, a first inflatable landing skid and a symmetrical second inflatable landing skid disposed at, and connected to, said lower portion of said fuselage, in equal spaced-apart relationship.

4,194,709

MECHANISM FOR RELEASABLY ATTACHING AN OBJECT TO A KITE

James M. Segerson, 6871 Meadowbrook, Olive Branch, Miss. 38654, and Bert G. Clawson, 983 McClure, Memphis, Tenn. 38116

Filed Oct. 16, 1978, Ser. No. 951,781
Int. Cl.[2] B64C *31/06*
U.S. Cl. 244—155 R **7 Claims**



1. A mechanism for releasably attaching an object to a kite to be carried aloft by the kite and to be released while the kite is in flight when the flight string of the kite is given slack, said mechanism comprising:

(a) a first member for being fixedly attached to the kite; and

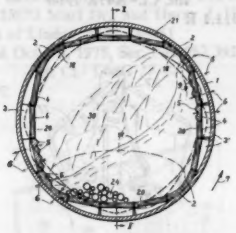
(b) a second ember for being pivotally attached to said first member and for being fixedly attached to the end of the flight string, said second member including a keeper portion for selectively retaining the object to be carried aloft by the kite, said second member having a first position in which said keeper portion will retain said object and having a second position in which said keeper portion will release said object, said second member beingheld in said first position when the kite is aloft and the flight string is held substantially taut, said second member moving to said second position when the kite is aloft and the flight string is given slack.

4,194,710

TUMBLING MILL

Josef E. Ebner, Palffygasse 18/10, A-1170 Vienna, Austria

Filed Jun. 20, 1978, Ser. No. 917,301
Int. Cl.[2] B02C 17/22
U.S. Cl. 241—182 10 Claims



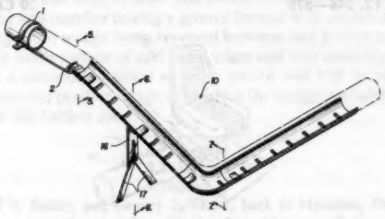
1. A tumbling mill comprising a cylindrical shell having an inlet and an outlet, said shell being provided on the inside with a lining system defining a grinding chamber which is generally polygonal in cross-section, the grinding chamber having rounded corner portions and side faces which approximate surface portions of an elliptic cylinder, said lining system comprising a plurality of peripheral liner rings, which are disposed on the inside of the shell and juxtaposed in the longitudinal direction of the shell, each of said liner rings having a plurality of peripherally spaced liner plates, which are secured to said shell, and spacers disposed between said liner plates and said shell at least at portions other than said corner portions.

4,194,711

FLEXIBLE SEWER LINE SUPPORT

Leroy Winton, P.O. Box 889, Placerville, Calif. 95667

Filed Jan. 9, 1978, Ser. No. 867,890
Int. Cl.[2] F16L 3/00
U.S. Cl. 248—49 4 Claims



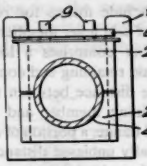
1. A flexible sewer conduit support comprising, in combination: a plurality of interconnected substantially semi-cylindrical troughs disposed in abutting relationship, said troughs having plural slots disposed on their bottom cylindrical faces, said troughs interconnected by means of tongue members disposed on said bottom face of said trough at each terminal portion of the longitudinal extent of said troughs, whereby said tongues of each trough extends into the slots of abutting troughs thereby defining a continuous, underlying interleaved support and means to support said trough and incline the trough above ground level in which said means to support said trough above the ground include a bracket member having a generally S-shaped upper portion to engage a slot in said trough, said portion terminates in a vertically downwardly extending lower portion said lower portion having a slot disposed therein, and said slot being provided with a bolt which serves to fasten a plurality of legs thereon.

4,194,712

CLAMPING STRUCTURE

Eilif Elvegaard, Karstensens vei 30, N-1660 Lisleby, Norway

Filed Sep. 14, 1978, Ser. No. 942,355
Int. Cl.[2] F16L 3/22; B65D 63/00
U.S. Cl. 248—68 R 10 Claims



1. A clamping structure for clamping of tubes or similar elements, comprising:

at least one clamping shoe for partly enclosing and retaining the element or elements to be clamped;

at least one clamping shoe receiving frame for attachment to a substructure and defining a space for receiving said at least one clamping shoe;

said frame having a pair of opposite parallel side portions defining guiding means in slidable engagement with mating guiding means provided on opposite side portions of said at least one clamping shoe; and

a fastening plate for fixing of said clamping shoe and said element to be clamped in said frame;

said fastening plate being provided with means for exerting a clamping pressure force directed towards the clamping shoe; and

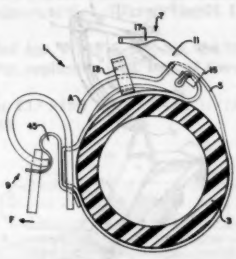
said frame being provided with holding portions projecting beyond said clamping shoe and being arranged to retain said fastening plate in a fixed position in said frame.

4,194,713

TOOL HOLDER AND COMPONENTS THEREOF

Thomas L. Johnson, 520 Thalia Rd., Virginia Beach, Va. 23452

Filed Dec. 30, 1977, Ser. No. 866,106
Int. Cl.[2] A47B 96/06; E04G 3/00
U.S. Cl. 248—231 25 Claims



1. A device for holding a tool comprising a strap means for wrapping about a support, a means for tightening said strap when wrapped about the support and a means for holding a tool, the tightening means and tool holding means being retained on said strap,

said tightening means comprising a lever member having a fulcrum end and a retaining end, and a retaining member for releasably securing the retaining end of the lever member in place, said lever member and retaining member being retained on said strap in such a way that when the retaining end of the lever member is secured in said retaining member the strap is tightened by force applied at the fulcrum end of the lever member and when the retaining

end of the lever member is released from the retaining member, the strap is loosened by relieving the force applied at the fulcrum end of the lever member, and wherein:

said retaining means comprises a generally U-shaped member whose base is secured to said strap and whose legs are flexible and include means for releasably retaining the retaining end of said lever member between said legs, and

said lever member comprises a longitudinally extending plate means, said retaining end comprising a lateral flange wider than the distance between the flexible legs of the U-shaped retaining member and having, longitudinally anterior to said flange, a portion of a width slightly greater than the normally unbiased distance between the flexible legs of the U-shaped retaining member; and

said tool holding means comprising a tool holder and a means for opening and closing said tool holder, said opening and closing means comprising a resilient spring plate member bent at a point intermediate its ends such that one side of said plate is normally biased toward the other, said tool holder being attached to respective sides of said plate such that the normal bias of said resilient spring plate member closes said tool holder and the application of force to separate the sides of said flexible spring plate member against the normal bias of said plate member opens said tool holder and such that upon release of said force the bias of said plate member automatically returns the tool holder to its closed position.

4,194,714

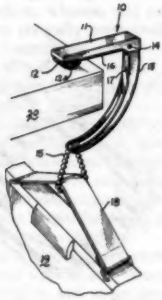
FOLDABLE PURSE HANGER AND WHISTLE

Wilderich C. Schultz, Chula Vista, Calif., assignor to Prima International, El Cajon, Calif.

Continuation-in-part of Ser. No. 666,649, Mar. 15, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 834,641

Int. Cl.[2] A45C *13/00*

U.S. Cl. 248—308 **4 Claims**



1. A hanger for a purse, or the like comprising: a first elongated arm; a second elongated arm; hinge means intercoupling the first and second arms at one of the ends thereof to permit the arms to be turned from a folded position to a position in which the arms are disposed at essentially 90° to one another; first means at the distal end of the first arm for supporting the hanger on a supporting surface; second means at the distal end of the second arm for suspending a purse, or the like from the hanger; and whistle elements formed in at least one of the arms adjacent said hinge means for enabling the hanger to be used as a whistle when the first and second arms are turned to the aforesaid folded position.

4,194,715

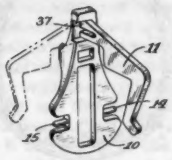
CONTAINER SUPPORT MEANS

Hugh M. Forman, Waukesha, and Richard A. Rauschenberger, Brookfield, both of Wis., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Dec. 27, 1977, Ser. No. 864,179

Int. Cl.[2] A47K *1/08*

U.S. Cl. 248—311.1 R **8 Claims**



1. A support for a container comprising:

a generally planar body having first and second opposed ends and a semi-resilient wall at its second end;

means on said body adjacent said first end for attaching a container to said body;

a support arm mounted on said body at said second end, said support arm being movable from a first position substantially in the plane of said body to a second position substantially perpendicular to the plane of said body; and

means on said support arm for engaging said semi-resilient wall at positions intermediate said first position and said second position, whereby movement of said support arm relative to said body is resisted at said intermediate positions.

4,194,716

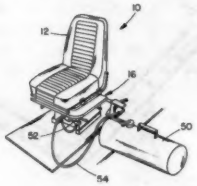
AIR SUSPENSION DRIVER'S SEAT

Chester J. Barecki, Grand Rapids, and Larry A. Wilkerson, Wyoming, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Filed Feb. 27, 1978, Ser. No. 881,905

Int. Cl.[2] A45D *19/04;* **F16M** *13/00*

U.S. Cl. 248—575 **20 Claims**



1. In a transportation seat primarily adopted for use as a driver's seat, of the type including a base adapted to be secured to a floor structure and a seat frame supported on said base, the improvement comprising:

side saddle adjustment means supported by said base and operatively engaging said seat frame for transversely adjusting the position of said seat frame relative to said base, said side saddle adjustment means comprising:

a transverse guide track carried by said base;

at least one roller having an axle secured to said seat frame, said roller riding on said guide track; and

latch means carried by said base and operatively engaging said seat frame for latching said seat frame in a plurality of transverse positions relative to said base, said seat frame including a pair of transversely spaced side members and wherein said side saddle adjustment means further includes a slide rod extending between said seat frame side members and a guide bracket carried by said base and at

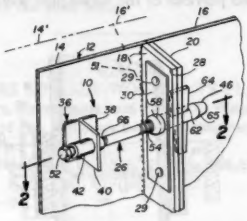
least partially surrounding said slide rod so that said slide rod may shift transversely relative to said guide bracket and said base.

4,194,717

WEDGE AND BOLT ASSEMBLY FOR PANEL UNITS

John T. Easton, 15073 Marl Dr., and Harry J. Harden, 15063 Marl Dr., both of Linden, Mich. 48451

Filed Oct. 18, 1978, Ser. No. 952,392
Int. Cl.[2] E04G *17/04*
U.S. Cl. 249—192 **3 Claims**



1. A bolt and wedge assembly of the type having a bolt passing through abutting frame edges of a prefabricated panel so as to secure the panels to one another, the frame edges having aligned apertures, said bolt and wedge assembly comprising:

a bolt having a slotted projecting end and an intermediate abutment land; bushing plates carried by the inside surface of it at least one of said frame edges adjacent its aperture; means slidingly mounting said bolt within the confines of one of said panels for movement of said projecting end through said aligned apertures such that said abutment land engages the bushing plate while said slotted projected end of said bolt extends beyond the inside surface of said other frame edge within the confines of said other panel; and wedge means received in said slotted projecting end and wedgingly engaging the inside surface of said other frame edge to draw said panels toward one another, said bolt member having a groove formed in its peripheral edge, said wedge being received between said groove and the inside surface of said panel when said bolt assembly is in a retracted position so as to secure said bolt in said retracted position and to ensure that the wedge is available for the further use.

4,194,718

CHOKE

Gerald S. Baker, and Guerry L. Hahn, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 14, 1978, Ser. No. 915,539
Int. Cl.[2] F16K *31/122, 31/44*
U.S. Cl. 251—14 **2 Claims**

1. A choke comprising

a body having an inlet, an outlet, a passage communicating from said inlet to said outlet and a seat ring surrounding said passage,

a valve member,

pressure responsive means connected to said valve member for moving said valve member toward and away from said seat ring to control flow through said passage,

a shaft connected to said valve member,

the outer portion of said shaft being tubular and having a plurality of ports and at least one J-slot,

a thrust collar surrounding said shaft being slidable axially thereon, having means preventing relative rotation therebetween and having a plurality of detents on its interior surface,

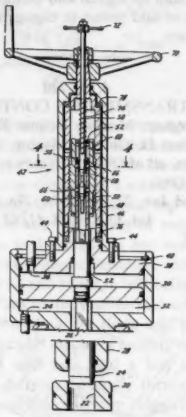
a plurality of locking balls, one of said locking balls positioned in each of said ports,

an operating stem in threaded engagement with said thrust collar,

means for retaining said operating stem against axial movement toward and away from said body,

a locking shaft extending into the interior of said tubular portion of said shaft and having tapered surfaces,

means for retaining said locking shaft in inactive position,



manipulation of said locking shaft releasing said retaining means so that said locking shaft can move to active position with said tapered surfaces urging said locking balls into said detents, and

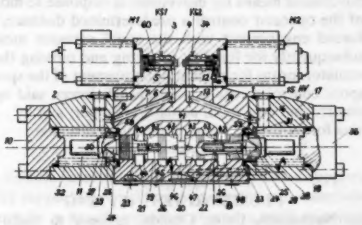
means for rotating said operating stem to move the thrust collar axially and with said locking balls in said detents to move said shaft and said valve member toward said seat ring.

4,194,719

HYDRAULIC CONTROL VALVE

Roland Ewald, and Herbert Lembke, both of Lohr, Fed. Rep. of Germany, assignors to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 896,765
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717384
Int. Cl.[2] F15B *13/043;* F16K *31/124*
U.S. Cl. 251—30 **3 Claims**



1. A multi-position flow control valve comprising: a housing having an elongated boring and a plurality of control spaces opening into said boring, a control piston movable in two opposite directions in said boring and cooperating at each end thereof with spring means and pressure fluid inlet means, the surface of said piston being formed with a plurality of recesses selectively communicating with said control spaces, said

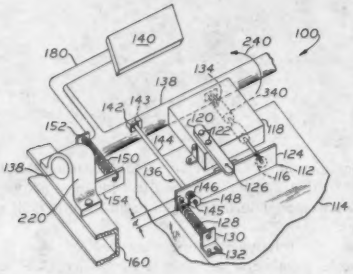
spring means including a first pressure spring supported between said housing and a spring collar, said collar abutting upon the housing and being movable against the associated first spring, each end of said control piston having an axial blind end bore, a supporting rod axially movable in said bore, a second spring located in said bore and urging said rod into engagement with a matching recess in said spring collar, said pressure fluid inlet means being selectively actuated to apply pressure against one end of said piston and displace the same against the first pressure spring in the opposite spring means whereby the second springs in said blind recesses maintain the supporting rods of said piston in engagement with the associated spring collars.

4,194,720

TRANSMISSION CONTROL

William I. Callaghan, Mentor; Dennis E. Dawson, Highland Heights; William D. Gubser, Mentor, and Joseph A. Vero, Shaker Heights, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jun. 27, 1977, Ser. No. 810,346
Int. Cl.[2] F16K *31/62*
U.S. Cl. 251—77 **7 Claims**



1. A transmission control for a motor vehicle, comprising:
a control valve on the vehicle;
a spool mounted in the valve;
a support member attached to the valve;
a spool actuator member pivotally connected to the support member;
first resilient means for urging the spool into contact with the spool actuator member;
second resilient means for urging the actuator member into contact with the spool in opposition to the first resilient means;
an operator control movably mounted on the vehicle;
spool control means for movement in response to movement of the operator control a predetermined distance, free of forced engagement with the spool actuator means and subsequently for forcibly engaging and moving the spool actuator means for permitting movement of the spool, said spool control means is positioned between said operator control and said spool actuator member; and
means for adjusting the predetermined distance.

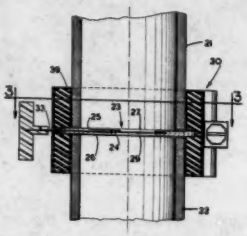
4,194,721

PLUMBING TEST FITTING

Carsten Nachtigahl, Delta, Canada, assignor to Nako Enterprises Ltd., Surrey, Canada

Filed Jul. 10, 1978, Ser. No. 922,817
Int. Cl.[2] F16K *3/312*
U.S. Cl. 251—148 **5 Claims**

1. A test fitting for installation between a pair of spaced apart aligned pipe sections of a sectionalized waste-pipe comprising:
(a) a disc-like closure plate having a diameter at least as great as the outside diameter of the waste-pipe sections adapted to be slidably inserted and removed from between said sections, the plate having a passage for providing communication between the pipe sections,
(b) a valve element mounted on the closure plate operable for closing or opening the passage to passage of fluid between the pipe sections,
(c) a radially extending operating handle connected to the valve element and extending beyond the periphery of the plate for enabling manual operation of the valve element between open and closed positions,
(d) a split compressable sealing gasket adapted to be wrapped circumferencially around the periphery of the plate and having a width sufficient so as to overlap the adjacent end portions of the waste-pipe sections, the gasket having an opening for enabling the passage of the operating handle there through,



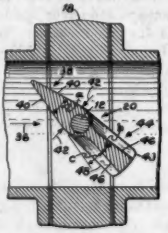
(e) a split separable clamp adapted to be extended circumferencially around the gasket and having an opening aligned with the opening of the gasket for enabling the passage of the operating handle there through for compressing the sealing gasket into fluid tight engagement with the periphery of the closure plate, the lapped adjacent end portions of the waste-pipe sections and the operating handle for preventing the escape of water from between the pipe sections and for enabling manual operation of the operating handle to move the valve element from its closed to its open position when the test fitting is applied to the pipe sections.

4,194,722

BUTTERFLY VALVE HAVING HIGH PERFORMANCE DISC

Charles L. Okerblom, Warwick, R.I., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 840,867
Int. Cl.[2] F16K *1/22*
U.S. Cl. 251—305 **18 Claims**



1. A disc for a butterfly valve, comprising:
a generally circular peripheral edge;
a shaft bore extending through the disc and having an axis extending through opposed portions of the peripheral edge;

a leading half adapted to face upstream when the disc is inserted in a valve, said leading half including two surfaces diverging from the most leading portion of the peripheral edge towards the bore, thereby forming a wedge facing upstream; and

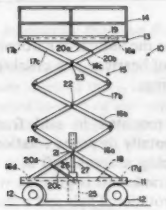
a trailing half adapted to face downstream when the disc is installed in a valve, said trailing half including two diverging surfaces extending from along portions of the disc adjacent the bore towards the most trailing portion of the peripheral edge, thereby forming a wedge shape also facing upstream, wherein said disc has a maximum thickness located in the leading half forward of and adjacent to the axis of the shaft bore.

4,194,723

SCISSORS LINKAGE WORKMAN'S PLATFORM

John L. Grove, Greencastle, and Gregg A. Wagner, Chambersburg, both of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.

Filed Apr. 14, 1978, Ser. No. 896,619
Int. Cl.[2] B66F 3/22
U.S. Cl. 254—9 C9 **9 Claims**



1. A workman's platform comprising:

a wheeled base for movement over a surface,

a deck above the base,

scissors linkages for elevating the deck each comprising plural sets of pin-connected lever arms,

the ends of the lever arms connected to another lever arm being off-set and pin-connected, so that the axis of each lever arm is spaced from the pin-connection between adjacent lever arms,

said arms in the retracted position of each said scissors linkage being horizontal, parallel and spaced apart,

means for mounting the upper end of both of the upper lever arms of each set on said deck for movement towards and away from each other and for permitting said upper lever arms to be in horizontal position when said upper ends of said upper lever arms are most remote from each other in the retracted position of said scissors linkages,

centering link means pivotally connected to said deck and to an upper lever arm of each set, and being horizontal in the retracted position of said scissors linkages,

means for mounting the lower ends of both of the lower lever arms of each set on said base for movement towards and away from each other and for permitting said lower lever arms to be in horizontal position when said lower ends of said lower lever arms are most remote from each other in the retracted position of said scissors linkages,

centering link means pivotally connected to said base and to a lower lever arm of each set and being horizontal in the retracted position of said scissors linkages,

actuating means for said scissors linkages mounted on the base having a linearly vertically movable driven element, and

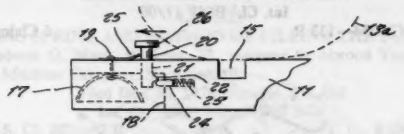
means connecting said driven element to the pivot pins connecting the lever arms of the lowest sets of lever arms.

4,194,724

CHAINMATE

Gregory Masegian, 209 El Camino Del Mar, Aptos, Calif. 95003

Filed Mar. 19, 1979, Ser. No. 21,356
Int. Cl.[2] E02C 3/00; G08B 7/00
U.S. Cl. 254—88 **1 Claim**



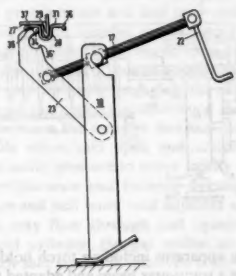
1. A chainmate device, for use in conjunction with a tire chain installation, comprising, in combination, a rectangular wooden block, one end of said block having an angularly inclined surface forming a ramp for a wheel of an automotive vehicle to climb thereupon, a horizontal top wall upon a remainder of said block, and a plurality of transverse, spaced-apart grooves across said horizontal top wall for receiving cross chains of said tire chain; a vertically slideable pin being near an opposite end of said block, a bell being aligned below said pin for being struck thereby when said wheel rides thereupon; a sideward protruding lug along said pin overriding a spring biased detent of said block for quickly thrusting said pin downwardly against said bell, and a leaf spring normally urging said pin upwardly immediately thereafter so that said pin clears said bell and does not stop resonating sound therefrom.

4,194,725

VEHICLE JACK

Willi Erschens, Schillingen, Fed. Rep. of Germany, assignor to Firma August Bilstein, Ennepetal, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,541
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1978, 2801735
Int. Cl.[2] B66F 3/12
U.S. Cl. 254—126 **13 Claims**



1. A vehicle jack having a support leg and a support arm pivotably supported on said support leg for movement about a pivot axis by a handle-operated thread spindle running in a spindle nut and a spindle bearing pivotably mounted one in each of the upper end of the support leg and the support arm, the support arm having a support plate at its distal end for use in setting, against a vehicle floor at a load carrying point thereof and is supported on the support arm about an axis of rotation parallel to the said pivot axis, said axis of rotation lying immediately adjacent the underside of the support plate with respect to the vehicle floor; said support plate having a depression for receiving a protrusion of such vehicle floor; said de-

pression being located beside said axis of rotation when said support plate engages such vehicle floor.

4,194,726

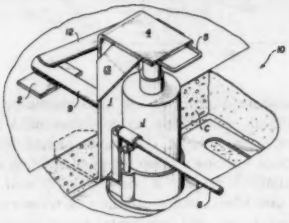
CONCRETE LIFTER

Sammy M. Hance, 3939 D St., Sacramento, Calif. 95819

Filed Mar. 22, 1978, Ser. No. 888,911

Int. Cl.[2] B66F *11/00*

U.S. Cl. 254—133 R **6 Claims**



1. A concrete removing device comprising bracket means suitably formed to engage a portion of concrete, and hydraulic jack means adapted to engage said bracket whereby when said jack is energized, said bracket moves a portion of the concrete relative to a remaining portion of concrete to thereby break off said portion of concrete, wherein said bracket means comprises a substantially inverted F-shaped element having two parallel legs extending in the same direction connected each to a vertical leg, and a fourth leg parallel to said first two legs but extending in a direction opposite from said first two legs.

4,194,727

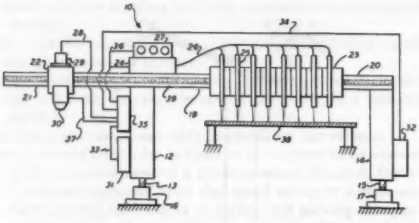
SHAPE CUTTING APPARATUS

Lawrence M. Layden, Stanton, N.J., and James R. Thomson, Bolivar, N.Y., assignors to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 844,776, Oct. 25, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,100

Int. Cl.[2] B23K *7/02, 7/10*

U.S. Cl. 266—58 **10 Claims**



1. Shape cutting apparatus including torch holder assembly means mounted on a transverse beam and adapted to be driven along said beam, control means for selectively driving said torch holder assembly along said beam which is rigidly mounted on first and second carriages, the improvement comprising:

first and second electric servomotor means coupled to said control means and connected electrically in parallel with one another and means for mounting said first and second servomotor means on said first and second carriages, respectively, such that upon energization of both said servomotor means, said carriages are driven at substantially the same speed along a pair of spaced, parallel longitudinal rails and said transverse beam is maintained in an essentially orthogonal relationship with respect to said rails.

4,194,728

APPARATUS FOR THE INDUCTIVE HARDENING BY QUENCHING OF BEARING SURFACES OF A CRANKSHAFT

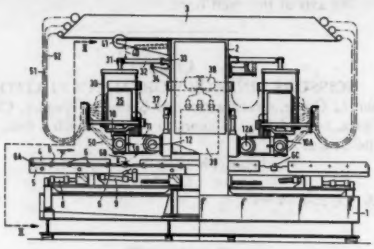
Edgar Stengel, Remscheid, and Friedhelm Emde, Huckeswagen, both of Fed. Rep. of Germany, assignors to Aeg-Elotherm G.m.b.H., Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 887,416

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712455

Int. Cl.[2] C21D *1/66*

U.S. Cl. 266—125 **6 Claims**



1. An apparatus for the inductive hardening by quenching of the running surface of bearings of a crankshaft having a longitudinal axis comprising:

a machine frame;

clamping means mounted in said frame for movement around a horizontally disposed rotational axis including a clamp for gripping a crankshaft at a clamping position, such that said crankshaft is gripped with its longitudinal axis along said rotational axis and a lever arm connecting said clamp to said frame for swinging said crankshaft between said clamping position and a heating position;

means for rotating said crankshaft about its longitudinal axis while said clamp is gripping said crankshaft;

inductive heating means disposed above said clamping means and crankshaft in said heating position including at least one inductor mounted in a plane perpendicular to said horizontally disposed rotational axis for movement in all directions in said plane, said inductor resting on the surface of said bearings when said crankshaft is swung into said heating position, and means for feeding an AC current to said inductor for heating the running surface of the bearings;

means for feeding a liquid coolant for quenching the heated running surface; and

means for transporting said crankshaft to said clamping position.

4,194,729

SINTERING WITH EXHAUST GAS PIPES

Karl Wacker, Hanau am Main, and Fritz Feigk, Langen, both of Fed. Rep. of Germany, assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1978, Ser. No. 956,058

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756082

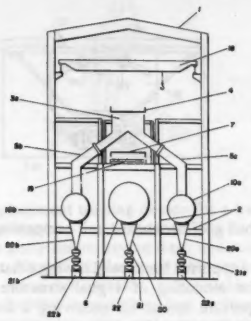
Int. Cl.[2] C22B *1/20, 1/26*; F27B *9/04*

U.S. Cl. 266—144 **7 Claims**

1. In a sintering plant for the sintering of fine grained iron ores and the like having a supporting frame; a straight sinter belt with an upper and a lower strand, said upper strand being divided into an initial sintering section and a succeeding cooling section; a plurality of wind boxes situated beneath the cooling section which remove cooling gas from the cooling section and a plurality of wind boxes situated beneath the sintering section which remove sinter exhaust gas from the

sintering section; and a flue for the exhausting of cooling gas and sinter exhaust gas, the improvement comprising:

(a) a cooling gas gas-collecting main being centrally disposed beneath the lower strand and connected to each of the wind boxes underlying the cooling section by at least two cooling gas connecting pipes, said cooling gas connecting pipes attaching at opposite sides of the wind boxes underlying the cooling section, and connected through a



plurality of gas evacuating fans and flue connecting pipes to the flue, and

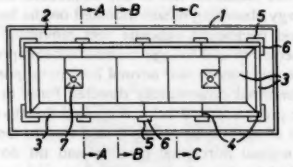
(b) two sinter exhaust gas gas-collecting mains being disposed on opposite sides of the cooling gas gas-collecting main and connected to each of the wind boxes underlying the sintering section by a plurality of sinter exhaust gas connecting pipes and connected through a plurality of gas evacuating fans and flue connecting pipes to said flue.

4,194,730

MOLTEN METAL HANDLING VESSELS

Chiaki Matsumoto, Akashi; Hirokatsu Imai, Amagasaki, and Masaru Okawa, Ashiyashi, all of Japan, assignors to Foseco Trading AG, Chur, Switzerland

Filed Dec. 27, 1977, Ser. No. 858,476
Int. Cl.[2] C21C *7/00*
U.S. Cl. 266—275 **24 Claims**



1. In a vessel for containing molten metal comprising an outer metal casing, a relatively permanent lining of refractory material adjacent the casing and adjacent the relatively permanent lining an inner expendable lining made up of a plurality of slabs of refractory heat insulating material, the improvement comprising, behind at least some of the joints between adjacent slabs of refractory heat insulating material, channels filled with a cast refractory composition.

8. In a vessel for containing molten metal comprising an outer metal casing, a relatively permanent lining of refractory material adjacent the casing and adjacent the relatively permanent lining an inner expendable lining made up of a plurality of slabs of refractory heat insulating material, the improvement comprising, behind at least some of the joints between adjacent slabs of refractory heat insulating materials, channels filled with a rammed refractory composition.

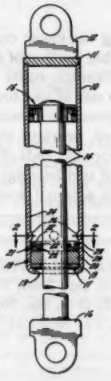
15. In a vessel for containing molten metal comprising an outer metal casing, a relatively permanent lining of refractory material adjacent the casing and adjacent the relatively permanent lining an inner expendable lining made up of a plurality of slabs of refractory heat insulating material, the improvement comprising, behind at least some of the joints between adjacent slabs of refractory heat insulating material, channels filled with preformed shapes of bonded refractory material.

4,194,731

GAS SPRING AND METHOD OF FILLING THE SAME

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Dec. 20, 1978, Ser. No. 971,424
Int. Cl.[2] F16F *5/00*; B65B *3/04*
U.S. Cl. 267—65 R **6 Claims**



1. A gas spring comprising, an elongated hollow cylinder having a closed end and an open end, a piston disposed within said cylinder, an elongated rod coaxial with said cylinder with a portion projecting into the cylinder through said open end and connected to said piston, at least one protuberance formed on the inner wall of said cylinder and spaced from said open end, an annular sealing member made of a flexible material and encircling said rod, said member normally being disposed between said protuberance and said open end, a first annular surface formed on said member and engaging said rod around its complete circumference thereby to form a seal between the member and the rod, and a second annular surface formed on said member and normally engaging the inner wall of said cylinder around the entire circumference thereof thereby to form a seal between the member and said wall, said member being operable when said open end communicates with a source of gas under pressure to move axially into engagement with said protuberance and forming openings between said second surface and said inner wall adjacent said protuberance whereby gas may flow through said openings and into the interior of said cylinder, the gas within said cylinder being operable when said source is removed from said open end to move said member toward the open end and out of engagement with said protuberance whereby said member seals the interior of said cylinder from said open end.

4,194,732

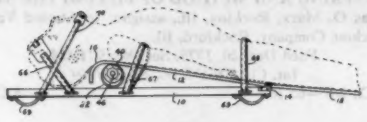
CARDIAC PATIENT SUPPORT

Arno J. Liebman, 1819 Shore Dr., Apt. 218, South Pasadena, Fla. 33707

Filed Jul. 5, 1978, Ser. No. 921,894
Int. Cl.[2] A61H *31/00*
U.S. Cl. 269—323 **1 Claim**

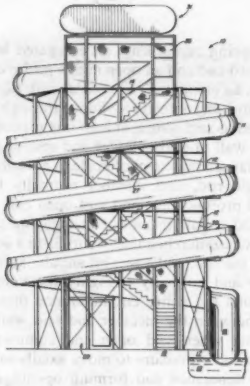
1. In a cardiac patient support for adjusting the position of a patient's head relatively to its torso; the combination comprising a flat, rigid, horizontal base; a substantially flat, rigid, torso

support of a length corresponding substantially to the length of an average human torso and of a width adjacent to its upper end corresponding substantially to the average shoulder width of a human torso, said torso support thereby being capable of directly supporting a patient's torso with the patient's head extending clear of the upper end of said support; a transversely extending hinge connecting the lower end of the torso support to said base toward the latter's lower end; and elevating means



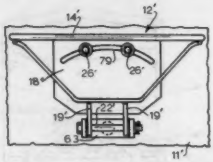
for raising and lowering the upper end of said torso support relatively to an underlying portion of said base; said elevating means comprising an eccentric roller extending substantially completely from side to side of said torso support, underneath and in supporting engagement with said torso support adjacent to the latter's upper end, bearings mounted on the base in supporting relation to opposite ends of said roller, and actuating means coacting with said bearings and roller to turn and hold the latter in various adjusted positions.

4,194,733
WATER SLIDE SYSTEM
Ben Whitehouse, Jr., P.O. Box 2684, Titusville, Fla. 32780
Filed Jul. 5, 1978, Ser. No. 922,056
Int. Cl.[2] A63G *21/18*
U.S. Cl. 272—56.5 R **10 Claims**



1. A water slide system comprising in combination:
a water slide surface extending from an elevated platform to a pool of water;
a first starting position located adjacent said elevated platform and connected to said water slide surface for directing a slider onto said water slide surface, said first starting position having a water line opening thereonto;
a second starting position located adjacent said elevated platform and connected to said water slide surface for directing a slider onto said water slide surface, said second starting position having a water line opening thereonto; and
means for directing water from one starting position water line opening to the other starting position water line opening whereby one slider can be launched in one starting position while another slider is getting into position in the other starting position.

4,194,734
ENERGY ABSORBING BASKETBALL GOAL/BACKBOARD UNIT
Frederick C. Tyner, 2124 Hillock Dr., Raleigh, N.C. 27612
Division of Ser. No. 706,836, Jul. 19, 1976, Pat. No. 4,111,420.
This application Jun. 22, 1978, Ser. No. 917,979
Int. Cl.[2] A63B *63/04*
U.S. Cl. 273—1.5 R **1 Claim**



1. A basketball goal-backboard unit comprising, in combination:
(a) a rigidly-supported backboard having a flat vertical front surface for mounting of a goal structure thereon and having aperture means for receiving a linkage passing through said backboard and connected to said goal structure;
(b) a goal structure having an annular ring with a normal horizontal position and a mounting plate rigidly secured to and supporting said ring and having an integral depending plate portion extending downwardly and perpendicular to the plane of said ring;
(c) lower support means mounted on said backboard front surface and having a pivotal connection to said depending plate portion enabling said mounting plate and said annular ring to pivot as an integral structure about a first axis passing through said connection parallel to the plane of said ring and parallel to and proximate said backboard front surface and enabling said ring to swing between said normal horizontal position and a downwardly tilted position;
(d) upper resiliently-loaded support means including:
(i) linkage means connected to said mounting plate above said pivotal connection and extending through said aperture means formed in said backboard; and
(ii) energy absorbing means mounted on the back surface of said backboard opposite said mounting plate and connected to said linkage means and being preloaded to retain said ring in said normal horizontal position until an abnormal downwardly directed force in excess of some predetermined value is applied thereto and in the event of such force to allow said ring to move out of said normal horizontal position and tilt downwardly and to be automatically returned to said normal horizontal position once said force is removed therefrom and during the return of said ring to said normal position to dissipate the energy stored in said energy absorbing means;
(e) auxiliary support means associated with said lower and upper support means and said mounting plate and permitting right left side rotation of said depending mounting plate portion around a second axis perpendicular to said first axis and permitting said depending mounting plate portion to rotate in a plane parallel to the plane of said backboard thereby allowing said ring to tilt sidewise under a said force; and
(f) auxiliary energy absorbing means mounted behind the backboard for returning said depending mounting plate portion to its normal nonrotated position after such side rotation to restore said ring to its normal horizontal position and for dampening the movement of said goal structure during such return.

4,194,735
BATTING STANCE AND STRIDE PRACTICE APPARATUS

Richard A. Wilson, 517 W. Maple, Centerville, Iowa 52544

Filed Mar. 8, 1978, Ser. No. 884,683
Int. Cl.[2] A63B 69/00
U.S. Cl. 273—26 R 15 Claims

11. A foot placement training device for a baseball batting stance, comprising,

a placement guide means having inner and outer edges, said inner edge adapted for placement adjacent home plate and having a pivot foot position, a first stride foot position generally parallel to said pivot foot position and perpendicular to said inner edge, and a second stride foot position,

said first stride foot position being connected to said second stride foot position to allow unobstructed passage of the stride foot of a batter from said first stride foot position to said second stride foot position during a swinging motion.

said pivot foot position, said first stride foot position, and said second stride foot position being located in an elongated continuous recess in said guide means, said recess having a predetermined depth to provide tactile guidance for the batter's foot placement with said foot placement guide means being yieldable to foot placement in misalignment with said pivot foot position, said first stride foot position and said second stride foot position.

4,194,736
BOWLING AID DEVICE

James R. Loafman, 3420 Rolling La., Midwest City, Okla. 73110

Filed Nov. 7, 1977, Ser. No. 848,949
Int. Cl.[2] A63B 69/00
U.S. Cl. 273—54 B 10 Claims

1. A device for aiding bowlers comprising:

a flexible finger sleeve including a pair of opposed, spaced wings and sized for encircling the little finger of the bowling hand with the wings overlapped;

means on said wings for adjustably engaging said wings in overlapped relation to each other; and

an elastomeric bracing element secured to one side of said finger sleeve between said wings and including:

an elongated rib having a length of from one and one-fourth inches to two and one-fourth inches to extend across the two outer joints of the little finger of the bowling hand; and

a palm contacting portion projecting from said elongated rib at one end thereof by a distance which is from about one-half to about three-fourths the length of said elongated rib.

4,194,737
ERRATICALLY ROLLABLE GAME DEVICE

William R. Farmer, 215 Campbell St., New Westminster, British Columbia, Canada (V3M 5K8)

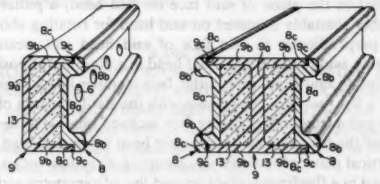
Filed Jun. 29, 1978, Ser. No. 920,388
Int. Cl.[2] A63B 43/04
U.S. Cl. 273—58 BA 8 Claims

4. A rollable plaything adapted to be propelled over a playfield in a team game and comprising a hollow body having outer and inner surfaces; said outer surface having a smooth, uninterrupted, circular circumference allowing unimpeded rolling movement; a weighted ball enclosed within the hollow body and having a spherical and smooth peripheral surface, said inner surface providing a multitude of depression-free paths of travel around which the weighted ball normally rolls in response to rolling movement of the hollow body, a plurality of magnetic elements mounted on the weighted ball substantially flush with the peripheral surface and spaced apart thereon, a plurality of magnetic members set into and substantially flush with the inner surface adapted to be attracted to the magnetic elements as the weighted ball rolls around the inner surface when the hollow body is propelled whereby the speed and direction of both the weighted ball and the hollow body are influenced by magnetic attraction.

4,194,738
FRAME OF A GAME RACKET

Mitsuhiro Inoue, Oyama, and Yo Maeda, Yuki, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,220
Claims priority, application Japan, Jun. 30, 1977, 52-78668
Int. Cl.[2] A63B 49/10
U.S. Cl. 273—73 C 10 Claims



1. A frame of a game racket including a looped head portion for supporting strings, a handle portion, and a bridge piece which forms one side of a triangular throat portion which connects said head portion and said handle portion comprising:

a continuous first frame member extending along a first side of said handle portion around the looped head portion and returning along a second side of said handle portion;

a second frame member extending around the inside portion of said looped head portion and being closed by said bridge piece, said bridge piece being solid and formed integrally with said second frame member;

two leg members being formed integrally with said second frame member and coextending with said first frame member to form said handle;

said second frame member being channel shaped and including a bottom wall and an open end, said open end thereof facing outwardly around said looped head portion;

said leg members being channel shaped, and including a bottom wall and an open end with said open end facing outwardly and extending from said looped head portion from adjacent each side of said bridge piece thereby forming said triangular throat portion therebetween, said bottom wall of each of said leg members being joined together into a I-shaped adjacent said triangular throat portion and extending downwardly to form an interior support of said handle portion;

said continuous first frame member extending around the outside peripheral portions to close said open end of the channel of said second frame member and said leg members and forming an internal space therebetween.

4,194,739

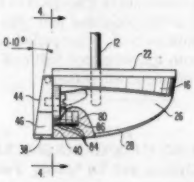
ADJUSTABLE GOLF PUTTER

Woodrow F. Thompson, 440 Pine Villa Dr., Atlantis, Fla. 33462

Continuation-in-part of Ser. No. 852,644, Nov. 18, 1977, abandoned. This application Aug. 8, 1978, Ser. No. 932,081

Int. Cl.[2] A63B *53/06*

U.S. Cl. 273—79 **6 Claims**



1. A golf putter comprising a head having a flat elongated front face and rearwardly tapering sides and bottom surfaces, a shaft secured to said head at an angle greater than 90° relative to the length of said elongated face on said head and disposed parallel to the plane of said face on said head, a putter face member rotatably mounted on said head for rotating about an axis perpendicular to said face of said head and means for securing said putter face to said head in a plurality of positions relative to said head, said putter face member being provided with a flat rear face engageable with the flat front face of said head and a front ball engaging face inclined relative to the rear face of the face member, said putter head being provided with a vertical plane of symmetry in a putting direction with a bore located in a flat front surface on said line of symmetry and said face member being provided with a pin on the rear surface thereof extending into said bore for rotatably mounting said face member on said head, at least one curved slot extending through the front face of said head with said bore as the center of curvature for said slot and screw means extending through said slot into threaded engagement with a bore in the rear face of said face member for securing said face member in adjusted angular position relative to said head, and level indicating means located on the upper surface of said face member and extending parallel to the line of intersection of the planes of the front and rear faces of the face member.

4,194,740

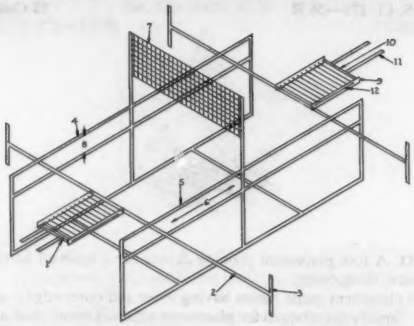
TWO MAN VOLLEYBALL

Michael G. Pase, 11902 Mulberry Ave., Cumberland, Md. 21502

Filed Apr. 25, 1977, Ser. No. 790,260

Int. Cl.[2] A63B *71/00*

U.S. Cl. 273—411 **2 Claims**



1. A game apparatus comprising:

a frame having first and second longitudinal sides and first and second lateral ends;

a net mounted on said frame midway between said lateral ends and extending between said longitudinal sides;

first support means slidably mounted on said frame between said net and one of said ends for movement longitudinally, laterally and vertically with respect to said frame; and

first racket means mounted on said first support means and adapted to be rotated between horizontal and vertical planes by a first player in attempting to hit a ball over said net to the other end of said frame.

4,194,741

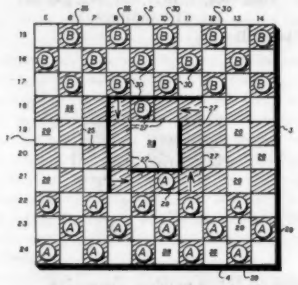
BOARD GAME APPARATUS

David M. Rea, 12106 Lerner Pl., Bowie, Md. 20715

Filed Jun. 30, 1978, Ser. No. 920,990

Int. Cl.[2] A63F *3/00, 3/02*

U.S. Cl. 273—243 **11 Claims**



1. Game apparatus, comprising:

a game board having a top surface divided by indicia into playing positions and non-playing positions being arranged in a grid formed by a plurality of rows extending between two opposite sides of the game board and columns extending between two opposite ends of the game board, with an orientation of the game board such that two players will respectively assume positions adjacent the opposite ends of the game board; said playing and non-playing positions being divided into three areas; the first area comprising playing spaces having first playing indicia alternating with non-playing spaces having second

non-playing indicia different from said first indicia around the entire outer periphery of the game board as defined by the outermost columns and rows; a second playing area within the first area being defined by a plurality of playing spaces having playing indicia different from said second indicia connected in a continuous four-sided ring; a third non-playing area within the ring having non-playing indicia different from the first indicia; and directional indicia on said second area indicating distinct forward and backward directions of annular playing movement around said ring;

a chance controlled member having a plurality of faces; one of said faces being provided with directional indicia correlated to said first-mentioned directional indicia on said second playing area representing game piece move instructions of only said forward playing direction of movement around the ring;

another of said faces being provided with directional indicia different from the directional indicia of said one face and correlated to said first-mentioned directional indicia on said second playing area representing game piece move instructions of only said backward playing direction of movement around the ring; and

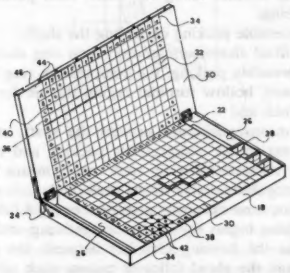
a first set of game pieces substantially identical to each other and adapted to be placed only on the playing spaces, and a second set of substantially identical game pieces having indicia distinguishing them from the first set of game pieces, so that each player may have their own set of game pieces.

4,194,742

LAND AND SEA WAR GAME APPARATUS

Ezra J. Adams, 15818 Davis Cup La., Ramona, Calif. 92065

Filed Jul. 31, 1978, Ser. No. 929,572
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—265 **8 Claims**



1. Land and sea war game apparatus of the type whereby opposing players in turn launch hypothetical missiles to attempt hits upon targets on an opponent's playboard, said apparatus comprising:

(a) a pair of identical assemblies each including a playboard, horizontal in use, with a visual shield board connected to the playboard and disposable in upstanding position between the players, said playboard and shield board having intersecting grid lines with equally spaced co-ordinately identified center sockets at the centers of the squares defined by the grid lines;

(b) said playboard having additional intersection sockets at the intersections of said grid lines;

(c) playing piece targets having portions removably insertable in said center sockets; and

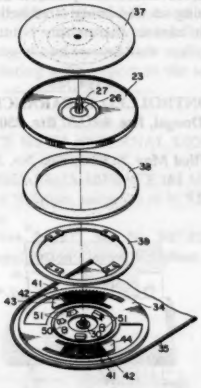
(d) multiple targets-supporting platforms each having a portion insertable selectively in said intersection sockets, said platforms having means for arbitrarily mounting a plurality of targets over a plurality of said squares so that the targets on said platforms may be co-ordinately identified and distinguished from targets not on said platforms, whereby the board has bi-element, land and sea character with said platforms representing land masses on a sea represented by areas of the playboard not covered by said platforms, in the playing of sea and land war games and the like.

4,194,743

RECORD PLAYER

Mitsuo Ohsawa, Chigasaki, and Hiroshi Kawagoe, Nakazawa both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 19, 1978, Ser. No. 943,748
Claims priority, application Japan, Sep. 22, 1977, 52-127763[U]
Int. Cl.[2] G11B *3/60*; H02K *1/22, 21/12*
U.S. Cl. 274—1 E **19 Claims**



1. A phonograph record player comprising:

a base;

a turntable rotatably mounted on said base;

rotor motor mounted on said turntable for providing a magnetic field, said rotor means including an annular magnet arranged coaxially on said turntable on the side of the latter facing said base; and

stator means fixed relative to said base so as to confront the magnetic field of said rotor means for exerting a torque on the rotor means, thereby causing said turntable to rotate, said stator means including coil means arranged upon respective tongue means formed integrally with said base, each said tongue means constituting a magnetic core for the respective coil means.

4,194,744

PHONOGRAPH PICK-UP TRANSDUCER USING A ONE-PIECE BEARING AND INERTIAL DAMPER FABRICATED FROM DIFFERENT MATERIALS

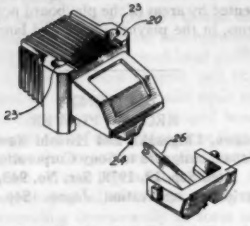
Allen R. Groh, Buffalo Grove; Frank J. Karlov, Park Ridge, and Lawrence R. Happ, Mundelein, all of Ill., assignors to Shure Brothers, Incorporated, Evanston, Ill.

Filed Feb. 1, 1978, Ser. No. 874,054
Int. Cl.[2] G11B *3/02*
U.S. Cl. 274—37 **6 Claims**

1. In a phonograph pick-up, an improved arrangement for resiliently supporting a stylus armature for vibratory motion with respect to a relatively fixed structure while suppressing unwanted vibrations in said stylus armature which comprises, in combination:

a receiving socket in said structure and a one-piece elastomeric member comprising an annular bearing section fabricated from butyl rubber mixed with 20 to 50 percent natural rubber and a cantilevered inertial damping section

fabricated from substantially all butyl rubber said annular bearing section surrounding said stylus armature and



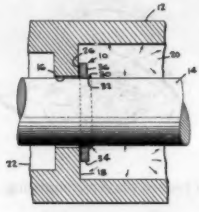
being inserted under compression into said socket, and said damping section being stretched over said armature and held in contact therewith.

4,194,745

CONTROLLED CLEARANCE SEAL

Thomas L. McDougal, Rte. 4 (U.S. Rte. 250 S), Grafton, W. Va. 26354

Filed May 2, 1979, Ser. No. 35,305
Int. Cl.² F16J *15/34, 15/40*
U.S. Cl. 277—27 **6 Claims**



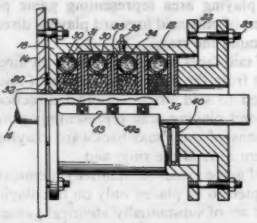
1. A controlled clearance seal for use on a shaft rotatably supported in a housing to seal high pressure hydraulic fluid in a housing having a sealing face adjacent the shaft and symmetrical with respect to the center line of the shaft, said seal comprising a generally annular body formed of a high strength material having a coefficient of expansion slightly greater than the coefficient of expansion of said shaft, said body having a sealing face engageable with said sealing face on said housing, said body having a flange portion projecting axially away from said sealing face on said body with said flange portion having an inner circumferential surface engageable with said shaft with said inner surface having an inside diameter slightly larger than the diameter of said shaft thereby permitting said body to rotate with said shaft until high pressure hydraulic fluid presses said sealing face on said body against said sealing face on the housing to frictionally retain the seal body in a fixed position relative to said housing and causing said flange to be compressed radially to decrease clearance between said body and said shaft causing said body to rub said shaft with resulting friction generating heat which causes expansion of said body and said shaft, whereupon said body expands at a greater rate than said shaft permitting the clearance between said body and said shaft to increase until rubbing of said shaft by said body ceases, thus stopping the heat generation whereupon said body instantly contracts due to cooling and pressure, until said body and said shaft again come into rubbing contact, with such cycle as just described involving rubbing, heating, expansion, cooling, contraction, and rubbing, being repeated several times per second resulting in a dynamic balance of said forces thereby establishing a virtually constant controlled clearance between said body and said shaft resulting in an extremely low leakage rate over a wide range of temperatures and pressures with such operational efficiency of said seal being a direct result of the combination of cross-section design and high strength material selection.

4,194,746

RADIALLY COMPRESSED ROTARY SHAFT SEALING DEVICE

James N. Stevens, 1016 W.Montana, Chicago, Ill. 60614

Filed Jun. 16, 1978, Ser. No. 916,081
Int. Cl.² F16J *15/46*
U.S. Cl. 277—34.3 **5 Claims**



1. A shaft sealing assembly for attachment about a rotatable shaft for preventing leaking along the shaft comprising:

an elongated housing defining a chamber therein, the housing positioned about the shaft, the shaft extending through the chamber;

end plate means having an opening therethrough, the end plate means enclosing one end of the chamber with the shaft passing through the opening therethrough;

at least one packing means positioned in the chamber and encircling the shaft, the packing means positioned adjacent one another along the shaft, each packing means comprising:

a compressible packing encircling the shaft;

a fluid filled elastomeric compression ring encircling the compressible packing, the compression ring having an enclosed, hollow toroidal region therein for retaining the fluid; and

spacer means positioned around the shaft, and axially adjacent to the compressible packing and the elastomeric compression ring, each spacer means being axially movable relative to the shaft; and

gland follower means positioned for exerting a force against the packing means for axially compressing each packing means in the housing chamber between the end plate means and the gland follower means, each compression ring thereupon exerting a radial compression force against the radially adjacent packing ring for pressing the packing ring uniformly against the shaft about its circumference.

4,194,747

THREE-PIECE OIL CONTROL RING

Kenneth J. Nisper, Muskegon, Mich., assignor to Muskegon Piston Ring Company, Muskegon, Mich.

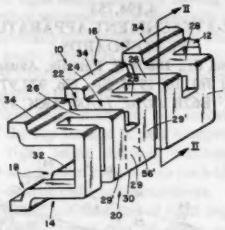
Filed Dec. 5, 1978, Ser. No. 966,647
Int. Cl.² F16J *9/20*
U.S. Cl. 277—140 **20 Claims**

1. A circumferential spacer-expander for an oil control ring, comprising:

a plurality of interconnected spring elements; and

means for interconnecting said spring elements and for defining a top rail stop; said spring elements each including a generally U-shaped member in axial section having a top leg, a bottom leg and a base interconnecting said top and bottom legs, said top leg having a radial slot formed therein extending from an inner radial edge along the

entire radial length of said top leg, and said bottom leg being slotless whereby the centroid of each spring element



is located axially above the circumferential center line of said spacer-expander.

4,194,748

RADIAL SHAFT SEALING RING

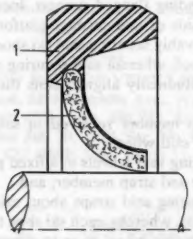
Hans Forch, Birkenau, and Helmut Niklas, Weinheim an der Bergstrasse, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 760,217, Jan. 17, 1977, abandoned. This application Mar. 9, 1978, Ser. No. 885,055

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1976, 7602075[U]

Int. Cl.[2] F16J *15/32*

U.S. Cl. 277—152 **16 Claims**



1. In a sealed radial shaft assembly comprising a radial shaft and a flat flexible annular sealing ring, the inner portion of said ring encircling said shaft, said sealing ring having fiber ends projecting therefrom and contacting said shaft so as to enhance said seal, the improvement which comprises an integral casing molded on the outside of said ring with the outer portion of the ring embedded in the casing to maintain the inner portion of the ring in contact with the shaft in an axially deflected position whereby the flexibility of the ring permits flexible sealing of the shaft independent of mounting tolerances.

4,194,749

SEALING RING

Maurice J. Bonafous, Oloron, France, assignor to Applications Mecaniques et Robinetterie Industrielle, Paris, France

Filed Jul. 26, 1978, Ser. No. 927,996

Claims priority, application France, Jul. 26, 1977, 77 22976

Int. Cl.[2] F16J *15/32*

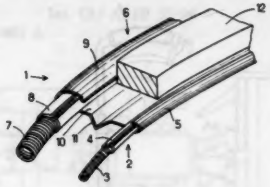
U.S. Cl. 277—163 **12 Claims**

1. A double toric sealing ring for sealing against a sealing surface and being self centering with respect thereto, and also functioning to obtain a static seal with respect to the base of a housing, comprising:

a. a first toric sealing ring structure for obtaining a static seal with respect to said base of the housing;

b. a second toric sealing ring structure for sealing against the sealing surface;

c. a sealed and elastically deformable structure mounting said first toric sealing ring on one side against said base



housing and resiliently mounting said second toric sealing ring on a second side, with said first and second sealing rings being mounted substantially coaxially, such that the resilient mounting of said second toric sealing ring enables it to be self-centering with respect to the sealing surface.

4,194,750

SEALING DEVICE WITH EXTERNAL DEFORMABLE FLANGES

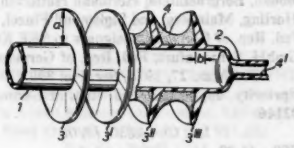
Richard C. Sovish, Waterloo, and Marc F. L. Moisson, Strombeek-Bever, both of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

Filed Nov. 2, 1977, Ser. No. 847,823

Claims priority, application United Kingdom, Nov. 3, 1976, 45725/76

Int. Cl.[2] F16J *15/32*

U.S. Cl. 277—208 **34 Claims**



1. A sealing device suitable for use as a duct seal comprising a hollow body member made of a polymeric material and provided on its outer surface with a plurality of spaced apart flanges, such flanges having a peripheral region remote from the surface that is substantially rigid at the maximum temperature likely to be encountered in use of the device and deformable only at elevated temperatures greater than said maximum temperature, wherein at least part of the outer surface of the hollow body body member has sealant thereon.

4,194,751

ROLLING TYPE ATHLETIC APPARATUS

Tomisaku Shinmura, No. 1343-3, Kobitomi-cho, Hamamatsu-shi, Shizuoka-ken, Japan

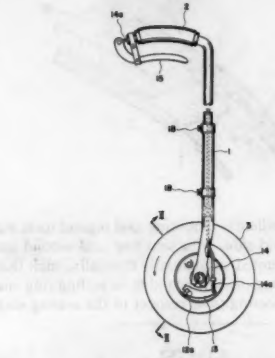
Filed Jul. 18, 1978, Ser. No. 925,841

Int. Cl.[2] A63C *17/14*

U.S. Cl. 280—11.2 **3 Claims**

1. Rolling type athletic apparatus comprising support rod means, a handle at one end of said support rod means, an axle at the other end of said support rod means, a wheel rotatably mounted on said axle, a foot support associated with said support rod means adjacent said wheel, said wheel defining an annular recess surrounding said axle, said recess having an inner periphery and an outer periphery, a side plate means fixed relative to said support rod means, said side plate means having a portion adjacent said recess, brake shoe means located in said recess, said brake shoe means being carried by said side plate means, said outer periphery of said recess forming a brake

drum for said brake shoe means, actuating means associated with said side plate means for moving said brake shoe means into and out of engagement with said outer periphery of said recess, operating means for said actuating means at said one end of said support rod means, linkage means connected between said operating means and said actuating means and one-way clutch means disposed within said recess between said brake shoe means and said inner periphery of said recess for permitting relative rotation between said wheel and said side plate means in one direction only.



4,194,752

SKATEBOARD

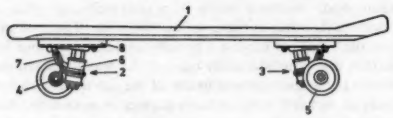
Gerhard Tilch; Wolfgang Friedrich, both of Schweinfurt; Herbert Dobhan, Bergrheinfeld; Hermann Hetterich, Heidenfeld; Peter Horling, Mainberg, and Sigismund Finzel, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,519

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 7802146

Int. Cl.[2] A63C *17/02*

U.S. Cl. 280—11.28 **1 Claim**



1. A skateboard comprising an elongated board, a pair of trucks mounted to said board adjacent opposite ends thereof, each truck having a pair of rotatable wheels, said truck comprising a tensile elastic suspension assembly and a pivot support member, said pivot support member consisting of a universally moveble ball and socket joint, said truck formed by a pair of complementary truck sections formed of sheet metal, one of said truck sections being of Y-shaped cross section and including an axle support portion formed by the stem of the Y and angularly disposed leg sections, a second complementary truck section of V-shaped cross section and of a predetermined configuration to fit and lie between the legs of said first truck section, said truck sections being connected by welding and being provided with stiffening ribs, means defining a groove-type recess in said axle within which the legs of the second truck section engage thereby to center the axle in the axle support portion, said pivot support comprising a ball head having a depending cylindrical pin which seats in a pocket formed by the arcuately shaped projections in one leg of the first and second truck sections, said ball head engaging a spherical cup formed in a complementary shaped portion of the base plate.

4,194,753

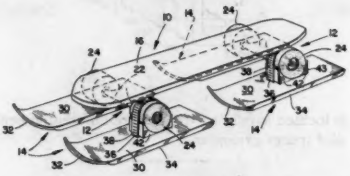
SKI-SHOE-ATTACHMENT APPARATUS FOR SKATEBOARDS

Delbert Schrishuhn, Jr., 18808 E. Petunia, Azusa, Calif. 91702

Filed Jul. 10, 1978, Ser. No. 922,977

Int. Cl.[2] B62B *19/02, 13/06;* **A63C** *17/18*

U.S. Cl. 280—13 **4 Claims**



1. A ski-shoe apparatus that is arranged to be removably mounted to each wheel of a conventional skateboard having a wheel-and-truck assembly, wherein said ski-shoe apparatus comprises:

a first pair of ski shoes removably mounted to the respective wheels of the forward wheel-and-truck assembly; and

a second pair of ski shoes removably mounted to the respective wheels of the rear wheel-and-truck assembly; wherein each ski shoe thereof comprises:

a substantially flat carriage platform having an upturned forward end member formed thereon;

a pair of depending flanged runners, located longitudinally along each side of said carriage platform; and

means of removably securing said ski shoe to said respective wheels thereof; wherein said securing means comprises:

a pair of longitudinally aligned slots disposed in said carriage;

a flexible strap member received in said aligned slots to clamp about said wheels;

means for holding said wheels in a fixed position relative to said carriage and strap member; and

means for adjusting said straps about said wheels and said holding means, whereby each ski shoe thereof is mounted to each respective wheel so as to allow individual movement of each ski shoe with the movement of said wheel attached thereto.

4,194,754

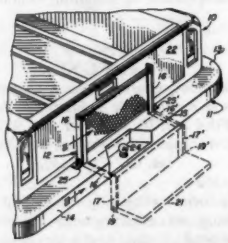
FOLDING STEP FOR PICKUP TRUCKS

Roger W. Hightower, 1224 Northside Dr., Prescott, Ariz. 86301

Filed Jul. 21, 1978, Ser. No. 926,826

Int. Cl.[2] B60R *3/02*

U.S. Cl. 280—166 **1 Claim**



1. A foldable step assembly for use on a pickup truck equipped with a vertically positioned tailgate and a rear bum-

per arranged outwardly of said tailgate and having a flat top surface comprising:

a substantially flat top step formed of aluminum,

a first pair of right angle members having a common side of each member secured to the underside of said top step,

means for pivotally mounting common ends of said first pair of right angle members to the top surface of the rear bumper of a pickup truck at spaced points juxtapositioned to its tailgate so that said common side of each of said first pair of right angle members lies across substantially the width of the top surface of said bumper,

a pair of right angle support brackets each pivotally mounted at common ends one to each of the other ends of said first pair of right angle members,

said other ends of said first pair of right angle members being provided with a first pair of edges perpendicularly arranged to the pivotal movement of said support brackets and forming a first stop for limiting the pivotal movement of said support brackets in a direction toward said top step,

a substantially flat bottom step formed of aluminum,

a second pair of right angle members having a common side of each member secured to the top surface of said bottom step,

means for pivotally connecting common ends of said second pair of right angle members one to each of the free ends of support brackets,

a common surface of said support brackets forming a second stop for limiting the pivotal movement of said second pair of right angle members about the free ends of said support brackets when said bottom step reaches substantially a horizontal position,

the underside of said top step being notched to receive the top of a ball hitch mounted on the bumper.

4,194,755

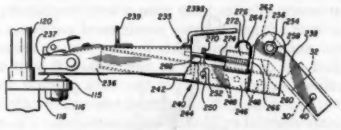
TOW BAR FOR VEHICLES

John W. Youngblood, 3201 Franklin Ave., Waco, Tex. 76710

Continuation-in-part of Ser. No. 894,783, Apr. 10, 1978. This application Jul. 20, 1978, Ser. No. 926,508

Int. Cl.[2] B60P *3/06*; B62D *53/04*

U.S. Cl. 280—402 **5 Claims**



1. Apparatus for detachably securing a vehicle to be towed to a hitch on a towing vehicle comprising: a generally inclined vertically extending member, said vertically extending member having an upper end with a dog formed thereon to form a first lower surface and a second inclined upper surface; means securing said inclined vertically extending member to the chassis of said towed vehicle; connector means pivotally secured to the upper end of said inclined vertically extending member adjacent the dog formed thereon; hitch coupling means secured to the outer end of said connector means to engage the hitch on the towing vehicle; and a block slideably disposed along said connector means adapted to slide between the lower surface formed on said dog of said inclined vertically extending member and the upper surface of said connector means when the connector means is secured in a generally horizontal position for connecting to a hitch, said block being adapted to be withdrawn from between said first lower surface of the dog and the connector means to enable said connector means to be pivoted to a generally vertical position with the block then being slideably disposed between the second inclined upper surface of said dog and the upper surface of said connector means to limit pivotal movement downwardly.

4,194,756

LIFTING DEVICE AND ASSOCIATED STRUCTURE

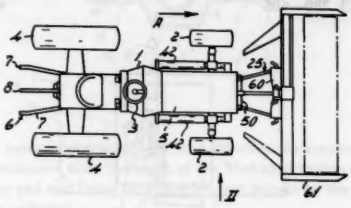
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Apr. 19, 1977, Ser. No. 788,915

Claims priority, application Netherlands, Apr. 23, 1976, 7604307

Int. Cl.[2] A01B *59/06*

U.S. Cl. 280—461 A **5 Claims**



1. A hydraulic lifting device in combination with a tractor including a tractor frame which is supported by ground engaging wheels, the device comprising three-point lifting means, said three-point lifting means being provided with means coupling said lifting device to the tractor so as to be pivotable as a single unit with respect to the tractor about a substantially horizontal axis that is parallel to the normal forward direction of travel by the tractor.

4,194,757

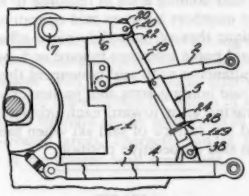
ADJUSTABLE LIFT LINK FOR A THREE-POINT HITCH

James H. Lucas, and David A. Berg, both of Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 16, 1978, Ser. No. 951,392

Int. Cl.[2] B60D *1/14*

U.S. Cl. 280—461 A **10 Claims**



1. A three-point hitch having an adjustable link comprising, a coupling adapted for mounting on a rock arm defining a spherical bearing, a lift link including a spherical bushing received in said bearing permitting universal pivotal movement of said link relative to said coupling, a screw member defining a cylindrical shank extending downwardly from said spherical bearing and bushing and defining a threaded end, a sleeve member having a square external surface and defining a threaded inner periphery receiving said threaded end of said screw member, a handle pivotally mounted for pivotal movement from a radial to an axial position on said screw member, said handle defining a square internal configuration for being received on said square sleeve member for locking said link axially, a keeper spring for retaining said handle in the locked position on said sleeve member.

4,194,758

BRAKE MECHANISM WHICH CAN BE MOUNTED ON A SKI

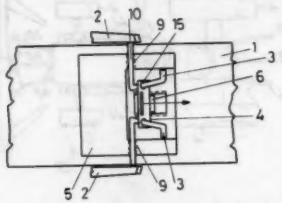
Josef Svoboda, Schwechat; Erwin Weigl, Brunn; Erwin Krob, Vienna; Karl Stritzl, Vienna, and Jaroslav Knotek, Vienna, all of Austria, assignors to TMC Corporation, Barr, Switzerland

Filed Apr. 26, 1978, Ser. No. 900,296

Claims priority, application Austria, Apr. 27, 1977, 2937/77

Int. Cl.[2] A63C 7/10

U.S. Cl. 280—605 **9 Claims**



1. A brake mechanism for use on skis, comprising:

a base plate mounted on a top surface of said ski;

a pair of laterally spaced brake members and bearing means supporting said brake members on said base plate for pivotal movement about a pivot axis and for movement toward and away from each other along said pivot axis, said brake members each having a braking arm and a holding arm, said brake members each being pivotal between an operative position wherein said braking arms project beneath a bottom surface of said ski and said holding arms project upwardly away from said top surface of said ski and an inoperative position wherein said braking arms are located above said top surface of said ski and said holding arms extend generally parallel to said top surface of said ski, said holding arms extend at an acute angle to each other when in said operative position;

a slide piece having a pair of laterally spaced openings therein each receiving one of said holding arms therethrough, the spacing between said openings corresponding to the lateral spacing between said holding arms at the ends thereof closest the apex of said acute angle and when said holding arms are in said operative position; and

means for effecting a sliding of said slide piece along the length of said holding arms in response to a movement of said brake members between said operative and inoperative positions thereof, said slide piece effecting a movement of said brake members toward and away from each other simultaneous with said movement thereof along the length of said holding arms and, particularly, a movement of said braking arms toward each other to said location above said top surface of said ski when said brake members are in said inoperative position.

4,194,759

BRAKE MECHANISM FOR A SKI

Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Apr. 26, 1978, Ser. No. 900,303

Claims priority, application Austria, Apr. 27, 1977, 2938/77

Int. Cl.[2] A63C 7/10

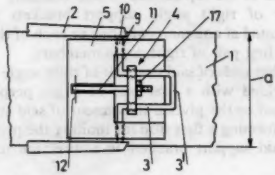
U.S. Cl. 280—605 **8 Claims**

1. A brake mechanism for use on skis, comprising:

a base plate mounted on a top surface of said ski;

a pair of laterally spaced brake members and bearing means supporting said brake members on said base plate for pivotal movement about a pivot axis and for movement toward and away from each other along said pivot axis, said brake members each having a braking arm and a holding arm, said brake members each being pivotal between an operative position wherein said braking arms project beneath a bottom surface of said ski and said holding arms project upwardly away from said top surface of said ski and an inoperative position wherein said braking arms are located above said top surface of said ski and said holding arms extend generally parallel to said top surface of said ski, said holding arms extend at an acute angle to each other when in said operative position;

a slide piece having a pair of laterally spaced openings therein each receiving one of said holding arms therethrough, the spacing between said openings corresponding to the lateral spacing between said holding arms at the ends thereof closest the apex of said acute angle and when said holding arms are in said operative position; and



adjustment means operatively connected to said slide piece for effecting a sliding of said slide piece along the length of said holding arms and an adjustment of the lateral spacing of said brake members in response to said adjustment movement of said slide piece to accommodate varying widths of skis.

4,194,760

WHEEL CAMBER ADJUSTING MEANS FOR VEHICLES

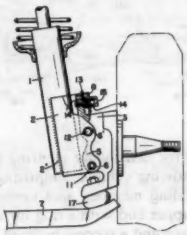
Masanao Shiomi; Yuuji Yokoya, and Motowo Harata, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 29, 1977, Ser. No. 837,682

Claims priority, application Japan, Apr. 18, 1977, 52-47742[U]

Int. Cl.[2] B62D 17/00

U.S. Cl. 280—661 **7 Claims**



1. A vehicular wheel camber adjusting mean for use with a Mc Pherson-type strut suspension which includes a shock absorbing strut having an outer cylinder, the strut being resiliently secured proximate the upper end thereof to a structural part of the vehicle, a coil spring surrounding the strut, the coil spring being located and acting between the upper end of the strut and the upper end of the outer cylinder, a lower arm having one end thereof connected to a structural part of the vehicle, the other end of the lower arm including a ball joint and a knuckle arm having one end thereof connected to the ball joint, said adjustment means comprising a bracket coupled to the outer cylinder proximate the lower end thereof, said bracket having a pair of arms integral therewith and first and second connecting holes through each said arm, said first connecting hole in each said arm being slotted, a portion of the

knuckle arm being positioned between said pair of arms of said bracket and secured thereto by means of first and second connecting bolts each having a longitudinal axis extending through said first and second connecting holes, respectively, in the longitudinal direction of the vehicle, there being further included an adjusting bolt and at least one shim vertically spaced from said connecting bolts for coupling said bracket to the knuckle arm portion, the longitudinal axis of said adjusting bolt being substantially at a right angle to the longitudinal direction of the vehicle said adjusting bolt extending loosely through said bracket and being threaded into the knuckle arm whereby when said adjusting bolt is axially displaced the knuckle arm portion will pivot about the longitudinal axis of said second connecting bolt and said first connecting bolt will move within said slotted first connecting hole.

4,194,761

SUSPENSION SYSTEM FOR TRACKED VEHICLES

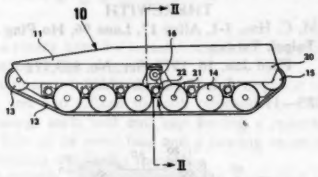
Alfons B. Falk, Bonassund; Antero E. Stenman, Ornskoldsvik, and Svante Wikland, Sjalevad, all of Sweden, assignors to Aktiebolaget Hagglund & Soner, Ornskoldsvik, Sweden

Filed May 16, 1978, Ser. No. 906,682

Claims priority, application Sweden, May 18, 1977, 7705890

Int. Cl.[2] B62D *55/02*

U.S. Cl. 280—705 **23 Claims**



1. A suspension system for a tracked vehicle having a hull provided with crawler tracks positioned on either side of the hull, each crawler track running round a track drive wheel, track roller assemblies and a take-up idler; a torsion unit assembly for each roller assembly, each torsion unit assembly including a plurality of torsion units mechanically connected in series and a mounting lever sleeve surrounding the torsion units and connected to one end of the series of torsion units; means connecting the other end of the series to the hull; an inner bearing housing anchored to the hull and journalling one end of the sleeve; an outer bearing housing anchored to the hull by means of a supporting panel which lies laterally outward of the crawler track and which is integrated with the hull, said outer bearing housing journalling the other end of the sleeve; and a mounting lever fixed to the sleeve and supporting the respective roller assembly.

4,194,762

KNEE PROTECTING DEVICE FOR OCCUPANT OF VEHICLE

Yoichi Sudo, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 8, 1978, Ser. No. 931,931

Claims priority, application Japan, Aug. 8, 1977, 52/105928[U]

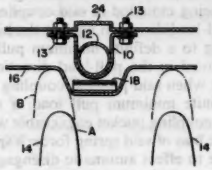
Int. Cl.[2] B60R *21/08*

U.S. Cl. 280—751 **13 Claims**

1. In a vehicle having a passenger compartment with a rigid part protruding therein toward a passenger, the improvement comprising a knee protecting device for the passenger, said device comprising:

a knee pad extending transversely across and adjacent the part between it and the knee of the passenger, said knee pad comprising a region intermediate the transverse ends thereof generally U-shaped in transverse cross-section, spaced a short distance from and partly surrounding the part; and

an elongated transversely extending impact energy absorbing member between the knee pad and the part, said member being in abutment with and substantially transversely coextensive with the bight of the U-shaped region of the knee pad and being deformable upon impact by the knees in a collision.



4,194,763

HOLLOW BEARER FOR VEHICLES

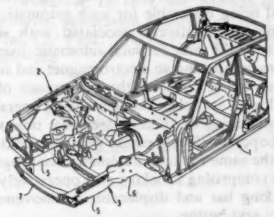
Willi Reidelbach, Sindelfingen; Hermann Renner, Magstadt, and Wolfgang Klie, Korntal, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 22, 1977, Ser. No. 818,268

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636655

Int. Cl.[2] B62D *21/02*

U.S. Cl. 280—784 **12 Claims**



1. A motor vehicle body construction having a longitudinal bearer which comprises a deformable section dissipating impact energy whose wall means possess area-wise strength characteristics which are different by reason of a treatment of areas changing the strength of the wall material thereof compared to non-treated areas, characterized in that a higher strength exists in the treated wall areas than in the untreated areas.

4,194,764

LOCK COUPLING FOR SAFETY BELTS IN MOTOR VEHICLES

Werner Grimm, Rottweil, Fed. Rep. of Germany, assignor to Jan Jakob Huizinga, Netherlands

Filed Jan. 18, 1978, Ser. No. 870,570

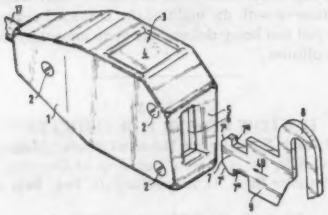
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701978

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—801 **11 Claims**

1. In a lock coupling for safety belts, in motor vehicles, including a coupling pocket accommodated within a housing and secured, by one of its ends, to a holder fixed to the vehicle, and provided on its opposite end, with a plug slot, a locking bar in the pocket, spring biased to its locking position, movable transversely to the plugging direction and actuable by means

of a button, for detachably locking a bar-shaped or latch-shaped coupling part secured to the safety belt and provided with a locking shoulder extending transversely of the plugging direction and engageable into the plug slot, and with said locking bar and an ejector spring acting on the plugged coupling part; the improvement comprising, in combination, said locking bar being mounted in said coupling pocket for movement in a pull-load direction against the bias of a spring force corresponding to a definite minimum pull load, said locking bar being moved in the pull-load direction by said plugged coupling part when said plugged coupling part is pulled by at least the definite minimum pull load; a minimum pull load spring in said coupling pocket engageable with said locking bar to provide the bias of said spring force; a spring-biased mechanism operable to effect automatic disengagement of said coupling part from said locking bar; said mechanism including a



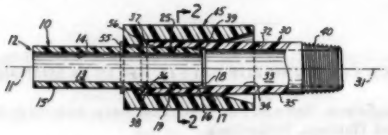
crank member operatively associated with said ejector spring and locking bar to release said coupling part, a locking member operatively associated with said crank member and locking bar and having a locking position preventing such automatic disengagement and being releasable for such automatic disengagement; first means operatively associated with said locking member to release the same for such automatic disengagement, said first means comprising an electromagnet and an electronic time switch switched on upon the occurrence of a definite minimum pull load, said electromagnet being operable responsive to such switching on of said electronic time switch; and second means operatively associated with said locking member for releasing the same for such automatic disengagement, said second means comprising a locking part operatively associated with said locking bar and displaceble by movement of said locking bar by said button.

4,194,765

TELESCOPING SLIP-TOGETHER TUBING JOINT

Robert R. Reddy, 1195 Michillinda Ave., Pasadena, Calif. 91107

Filed Mar. 13, 1978, Ser. No. 885,807
Int. Cl.[2] F16L *47/00*
U.S. Cl. 285—27 **20 Claims**



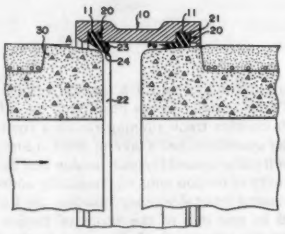
1. A telescoping slip-together tubing joinder comprising:
a first tube and a second tube each having an axis, each tube comprising an annular wall defined by a respective inside and outside circularly-sectioned concentric surface, each said tube terminating at a joinder end; the diameters of the outside surface of the first tube and the inside surface of the second tube being such that at least a portion of said tubes adjacent to said joinder ends can telescopically overlap one another; flexible seal means carried by and extending laterally beyond one of said two last named surfaces by a distance sufficient to make a peripheral seal between them when the said surfaces are sufficiently axially overlapped and being sufficiently deformable as to enable said sufficient axial overlap to occur; a guide sleeve having an inside cavity defined by a continuous, fully peripheral and unitary guide wall; and a removable retainer means engageable between said guide sleeve and said first tube to hold said guide sleeve to first tube with said guide wall projecting beyond said joinder end of said first tube, and preventing substantial axial movement of said guide sleeve when engaging the said guide sleeve to said first tube, the lateral dimensions of said guide wall, and of said outside surfaces of said first tube and said inside surface of said second tube at their joinder ends being so proportioned that, with the outside surface of second tube bearing against said guide wall, the interference circle of the first tube lies inside the interference circle of the second tube, whereby an axially telescoping thrust on the two tubes will result in the joinder end of the second tube passing axially over the joinder end of the first tube regardless of any permissible lateral offset of the axes of the tubes.

4,194,766

SELF-ALIGNING RING JOINT FOR JOINING CONCRETE PIPES HAVING ENDS ADAPTED FOR USE THEREWITH

Mitchell M. C. Hsu, 1-1, Alley 17, Lane 96, Ho Ping East Rd., Sec. 2, Taipei, Taiwan

Filed Jan. 16, 1978, Ser. No. 869,772
Int. Cl.[2] F16L *17/02*
U.S. Cl. 285—110 **4 Claims**



1. A self-aligning ring joint of the type used for joining concrete pipes, said ring joint including an outer rigid ring member adapted to bridge adjacent pipe ends and having suitable grooves provided internally at opposite ends thereof, each groove being adapted for securing a sealing ring, two sealing rings made of a suitably elastic material, each sealing ring comprising a main body portion tightly fitted into one of said grooves and a depending mouth portion having an internal tapered annular surface, said mouth portion being provided integrally along the outer circumference thereof with an annular protuberant flange which in conjunction with inserted pipes having similarly tapered ends is deformed between said pipe ends and said ring member when said pipes have been joined by said ring joint whereby compression stress is stored in said flanges, said flange being deformed into tight surface engagement with said ring member and said tapered surface of the ring mouth being pressed into tight surface engagement with the adjacent tapered end of the inserted pipe; said ring joint being characterized in that due to the compression stress stored in said flanges under deformation between the outer circumferential surfaces of said tapered pipe ends and the surrounding corresponding tapered inner circumferential surfaces of said depending mouth portions, two flanges of each ring joint will, whenever there is external force, from time to time tend to return the stored compression stress between said outer ring

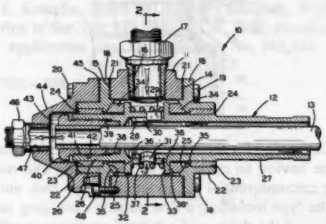
member and the outer circumferential surface of said tapered pipe ends to simultaneously clamp and push back the penetrating pipes until the resulting pressure and compression stress at both ends of the ring joint is finally equal, in the case of which said ring joint finally finds its central position between the pipe ends.

4,194,767

ROTARY JOINT

Donald G. McCracken, Horton, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed May 8, 1978, Ser. No. 903,652
Int. Cl.[2] F16L *39/04*
U.S. Cl. 285—134 **5 Claims**



1. In a rotary joint for transmitting fluids therethrough, the combination comprising:

a. a stationary tubular housing having opposed open ends;

b. an end cap affixed to each opposed open end of said housing, each said end cap having a spherical sealing surface on its inner face and a bearing receiving portion extending outwardly thereof;

c. a rotatable sleeve concentrically journalled within said end caps, said sleeve comprising a pair of axially aligned sections connected together for unitary rotation and axial movement relative to each other within said housing, each said sleeve section extending beyond said spherical sealing surface of said end caps;

d. a bearing disposed within the bearing receiving portion of each said end cap for journalling the end of each of said sleeve section extending beyond said spherical sealing surfaces;

e. a sealing ring mounted for axial movement on each said sleeve section, each said sealing ring having a spherical sealing surface for intimately engaging the adjacent spherical sealing surface on said end caps; and

f. means biasing said sleeve sections and said sealing rings axially apart for urging said sealing rings into sealing engagement with said spherical sealing surfaces on said end caps, wherein said sealing rings are "rigidly" supported by said sleeve sections and the sealing surfaces of said end caps and sealing rings and the forces urging said sealing rings into sealing engagement with said end caps tend to circumferentially compress said sealing rings.

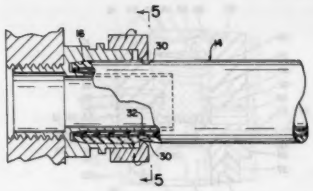
4,194,768

LIQUID-TIGHT CONNECTOR

Thomas J. Gretz, Stow, Ohio, assignor to The Scott & Fetzer Company, Bedford Heights, Ohio

Filed Dec. 30, 1977, Ser. No. 865,934
Int. Cl.[2] F16L *55/00*
U.S. Cl. 285—178 **11 Claims**

1. A liquid-tight connector for flexible liquid-tight electrical conduit, comprising a body member and a compression member, the body member having in its interior an annular seat for sealingly receiving the end of the conduit in liquid-tight relationship, said annular seat being in the form of an axially presented smooth-sided groove having axially extending sides including a radially inner side and a radially outer side for engaging respectively the radially inner and outer sides of said conduit end, the body member including means for engaging in liquid-tight relationship with an associated fixture, the body member and compression member together comprising both (1) the entire means for eccentrically asymmetrically gripping the conduit while the conduit end is positioned at the annular seat and (2) the entire means for axially compressing the conduit to wedge the eccentrically asymetrically gripped conduit



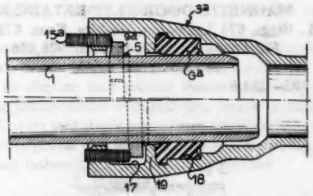
end into liquid-tight engagement against the annular seat with the inner and outer sides of the conduit end being engaged respectively by the inner and outer sides of said axially presented smooth-sided groove, said means for radially gripping and said means for axially compressing being simultaneously responsive to relative rotation between the compression member and the body member.

4,194,769

DEVICE FOR THE TENSILE LOCKING OF PIPE ELEMENTS

Georges E. Bram, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Jul. 13, 1977, Ser. No. 815,404
Claims priority, application France, Jul. 13, 1976, 76 21442
Int. Cl.[2] F16L *17/00, 21/08, 23/02, 27/00*
U.S. Cl. 285—184 **7 Claims**



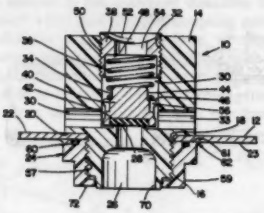
1. A device for effecting a tensile locking of a coupling between a pipe element having a male end and a pipe element having a socket which defines an annular space around the male end, which coupling comprises an annular sealing element which is disposed in said space, radially between said socket and male end, and is operative by a radial compression of the sealing element by the socket and the male end, said elements being capable of having an angular deviation therebetween, said device comprising a circumferentially extending flange extending radially inwardly from an entrance end of the socket and substantially closing said annular space while allowing said angular deviation in an assembled state of the coupling, means defining a shoulder integral with the male end and disposed, in said assembled state of the coupling, between the flange and the sealing element, a split ring surrounding the male end between the flange and the shoulder, and spacing means interposed between the flange and the ring and applying the ring against the shoulder and comprising means defining axial tapped passages arranged circumferentially around and carried by the flange and screws which are screwthreadedly engaged in said passages and are in bearing relation to the ring in said annular space on a side of the ring remote from the shoulder.

4,194,770

COMPRESSION FITTING

Donald L. Richards, Durham, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 1, 1978, Ser. No. 882,542
Int. Cl.[2] F16L 5/02
U.S. Cl. 285—206 14 Claims



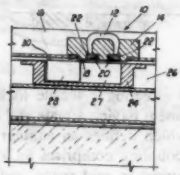
1. A fluid fitting for compression attachment to a liquid container, comprising a body; a cylindrical projection extending from said body and adapted to be exposed to said liquid, said projection including an externally threaded portion, and a non-threaded portion; and a nut interfitting with said projection, said nut including an internally threaded portion engageable with the threaded portion of said projection, a face adapted to engage an interior surface of said container, an outer side surface formed generally perpendicular to said face, first pressure sealing means on said face, a lip extending upwardly from said face and outwardly from said outer side surface to define first liquid sealing means, and combined second pressure sealing means and second liquid sealing means engageable with the non-threaded portion of said projection.

4,194,771

MAGNETIC DOOR STAY RETAINER

Ronald L. Biggs, 874 Lexington, Wichita, Kans. 67218

Filed May 15, 1978, Ser. No. 906,086
Int. Cl.[2] E05C 17/56
U.S. Cl. 292—251.5 9 Claims



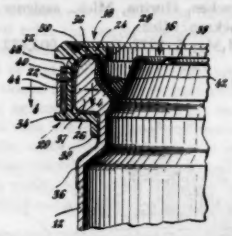
1. In a magnetic door retainer assembly of the type that includes a magnetic unit and an armature unit, such units being adapted for mounting in a door frame and in a door in an orientation relative to each other, when in coacting registry, that is normal to the direction of their relative movement from registry on door opening movement, the improvement comprising said magnetic unit including a magnet and having a recess therein that opens toward the armature unit when the units are in registry, said armature unit including an armature mounted for movement therein between retracted and partially extended positions, with said armature being magentically urged toward the magnet and partially received in the recess when the units are in registry, said magnet and said armature constituting elements of a magnetic circuit when the armature is partially received in the recess, and means carried by the magnetic unit for adjustably predetermining the minimum value of the reluctance of said magnetic circuit.

4,194,772

PLASTIC LOCKING RING AND METHOD OF MAKING

Donald J. Hurd, 658 Ridgefield Rd., Wilton, Conn. 06897, and Gerard J. Morgan, III, Anchorage 350 Grovers Ave., Suite 3A, Bridgeport, Conn. 06605

Filed Nov. 15, 1977, Ser. No. 851,672
Int. Cl.[2] E05C 19/00
U.S. Cl. 292—256.65 16 Claims



1. A locking ring for securing a lid to a drum, the drum being of the type having an open end and a radially and outwardly extending circumferential lip about the open end, and the lid being of the type including a first portion extending across the end opening of the drum and a second portion extending generally normal to said first portion about said lip, said locking ring comprising:

an elongated strap of a plastic polymeric material, said strap including a unitary longitudinal rib, first and second longitudinal flanges extending from one face of said rib generally normal to said face of said rib, and third and fourth longitudinal flanges extending from said rib away from said first and second flanges such that said elongated strip has a generally H-shaped cross section,

a first fastener element extending from said rib at one end of said strap, and a second fastener element on the other end of said strap for securing said first fastener element to said other end of said strap,

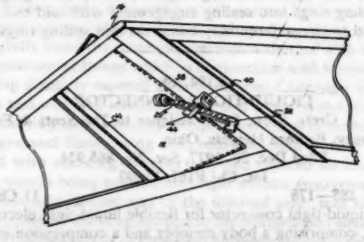
whereby said strap may be formed into a circular shape with the first and second flanges directed radially inwardly, and may be secured to itself about the second portion of the lid and about the drum to secure the lid to the drum.

4,194,773

LATCHING DEVICE

Philip W. Jaros, R.D. #1, Gloversville, N.Y. 12078

Filed Jan. 24, 1978, Ser. No. 871,945
Int. Cl.[2] E05C 17/18
U.S. Cl. 292—267 3 Claims



1. A latching device for releasably securing a vent member in a plurality of positions, said latching device comprising a connecting member secured to a vent member, said vent member being carried on a frame means, a latch bar pivotally attached to said connecting member, a guiding and locking

assembly attached to said frame means, said guiding and locking assembly having an aperture formed therein for slidably receiving said latch bar and lock means pivotally mounted on said guiding and locking assembly for securing said latching member, said latch bar constructed and arranged for movement in directions axially and non-axially relative to one axis of said aperture.

4,194,774

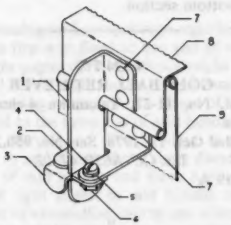
GARBAGE CAN LOCK

Dorothy E. Kempka, 28305 SE. 61st St., Issaquah, Wash. 98027

Continuation of Ser. No. 817,794, Jul. 21, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,144

Int. Cl.[2] E05C *13/02*

U.S. Cl. 292—304 **1 Claim**



1. A lock for securing a closure member having a peripheral lip to an open ended container on which the closure member is positionable in a closure position in overlying relation with the container end opening with its lip telescopically overlapping a portion of the container adjacent the end opening thereof, the lock comprising: two members mounted on the closure member and container, respectively; and a locking element; one of said two members including two finger portions projecting outwardly and defining an open ended elongated receiving slot therebetween into which a portion of the other of said two members is insertable to restrain movement of the closure member with respect to the container in a direction transverse to the longitudinal axis of the container when the closure member is positioned in its closure position; the other of said two members including an elongated plate portion adapted to extend toward said two finger portions and through said receiving slot when said closure member is positioned in said closure position, said plate portion having an open ended transverse locking slot extending from its outer edge at an elevation immediately adjacent the sides of said two finger portions opposite the mounting for said other member; and said locking element including an elongated flat section mounted to said opposite side of one of said finger portions adjacent said receiving slot for movement into a locking position at which a portion of said flat section extends through the locking slot of said plate portion and into engagement with said opposite side of the other of said finger portions to secure said closure member to said container and to resist forces tending to separate said closure member from said container by bearing against said opposite sides of said finger portions, said locking element further including an outwardly exposed finger catch for movement of said flat section into and out of locking engagement with said plate portion, and said locking element including means mounting said flat section to said one finger portion in springloaded engagement such that said flat section bears against said finger portions and requires positive manual force to be applied to said finger catch to open said locking element.

4,194,775

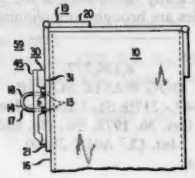
FASTENER FOR A PAY TELEPHONE STATION COIN BOX

Frank J. Shea, 258 E. Shore Trail, Sparta, N.J. 07871

Filed Feb. 4, 1977, Ser. No. 765,532

Int. Cl.[2] B65D *33/34*

U.S. Cl. 292—307 R **27 Claims**



1. In combination with a security box containing articles of monetary value and provided with a staple including hasp having a first two spaced adjacent ends secured to one face of said box and a second two spaced adjacent opposite ends terminated in an integral curvilinear segment; said first and second two staple ends, said segment and said one box face determining a hollow space interiorly of said staple; said hasp also embodying a member having one end attached to a cover of said box at an area adjacent to said first two staple ends and an opposite end movable pivotally at said member one end; said member opposite end formed with a slit for receiving therethrough said segment and disposing said last-mentioned end adjacent to said staple first two ends and said box face to assemble said hasp on said box;

a fastener for locking said assembled hasp on said box to prevent unauthorized entry thereinto, comprising:

first means including an elongated rectilinear projection positioned in said staple hollow space to extend beyond opposite sides thereof adjacent to said member opposite end; and

second means formed with an aperture for receiving said segment therethrough to extend beyond said second means to dispose said second means externally of said staple in juxtaposition with said first means to overlie said projection on said staple space opposite sides between said member opposite end and said last-mentioned sigment to form said fastener in a multimeans structure.

4,194,776

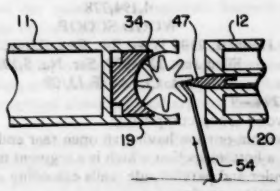
SECURITY ASTRAGAL FOR DOUBLE DOOR ASSEMBLY

Lawrence F. Biebuyck, Dallas, Tex., assignor to Howmet Corporation, New York, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,353

Int. Cl.[2] E05C *19/02*

U.S. Cl. 292—346 **11 Claims**



1. An astragal for a double door assembly comprising:

a first meeting stile for one of said doors;

a second meeting stile for the other of said doors;

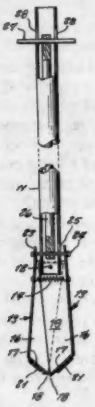
said first stile having a channel formed in the edge thereof, said channel being open toward said second stile;

said second stile having a step formed in the edge thereof oriented toward said first stile and toward the indoor side of said other door;

a rod having a gear-toothed cross sectional profile rotatably mounted in said channel with teeth thereof projecting past the open edge of said channel; and

a blade secured to said step having a nose projecting toward said rod sufficiently far to engage the gear teeth thereof when said stiles are brought into alignment upon closure.

4,194,777
DOG WASTE SCOOP
Arthur Carns, 120-47 - 217th St., Cambria Heights, N.Y. 11411
Filed Oct. 30, 1978, Ser. No. 956,207
Int. Cl.[2] A01K *29/00*
U.S. Cl. 294—1 BA **3 Claims**



1. A dog waste scoop, comprising in combination, an elongated tubular handle, a pair of scoop-shaped jaws pivotally attached at one end of said handle, a tension coil spring normally urging said jaws in a pivotally closed position, and a pull rod slidable in the center of said handle having a hand-operated cross-peg near an upper end of said handle for convenient pulling so as to pivot said jaws apart; a lower end of said pull rod having a transverse rivet connected to upward tongues on an upper edge of each said jaw; each said jaw including an inclined lip at its lower end so that a lower edge of said lips abut each other when said jaws are closed, an adhesive pad mounted on an outer side of each said lip, so that a disposable cellophane sheet maybe temporarily adhered at its opposite ends to said pads while a center of said sheet bridges across an entry to a mouth formed between said jaws, said sheet center extending inwardly inside said mouth.

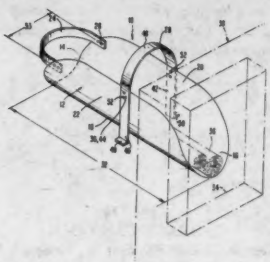
4,194,778
WOOD SCOOP
C. Leroy Hodnett, 2100 Wren Rd., East Ridge, Tenn. 37412
Filed Jan. 22, 1979, Ser. No. 5,193
Int. Cl.[2] A47F *13/08*
U.S. Cl. 294—9 **10 Claims**

1. A wood scoop comprising:

(a) a bottom portion having an open rear end an open front end, a bottom section which is a segment of a section of a cylinder and parallel side walls extending upwardly from the bottom section;

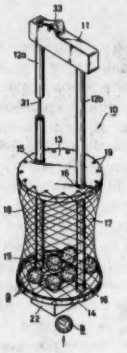
(b) a rear handle fixedly attached to the side walls across the open rear end;

(c) a center handle fixedly attached to the side walls across the top of the body portion at a first point which is located at least about one-half the length of the body from the front end; and



(d) two legs each fixedly attached to a side wall at a second point which is located about one-half the length of the body from the front end, the legs extending to about level with the bottom section.

4,194,779
GOLF BALL RETRIEVER
Isamu Ouhashi, No. 11-27, Takanawa 4-chome, Minato-ku, Tokyo, Japan
Filed Oct. 11, 1978, Ser. No. 950,292
Int. Cl.[2] A63B *47/02*
U.S. Cl. 294—19 A **5 Claims**



1. A golf ball retriever comprising: a handle; parallel support posts connected to opposite ends of said handle; an upper plate member and a lower plate member secured to said posts in spaced-apart relationship and defining therebetween a ball storing chamber; a net structure enclosing said chamber, at least one of said posts being hollow or slitted throughout its length; a rectangular frame member formed integrally with said lower plate member and defining a rectangular opening communicating with said chamber; a ball capturing frame member coextensive with and hingedly connected to said rectangular frame member and having inwardly projecting longitudinal parallel lugs defining therebetween a longitudinal gap wide enough to admit the golf ball; a valve means extending longitudinally on said parallel lugs for resiliently gripping and passing the ball into said chamber; and a ball removing means for emptying the retriever comprising a spring-biased hook pivotally connected to said lower plate member for releasably engaging said capturing frame member with said rectangular frame member and an actuator connected between said handle and said hook through said one hollow or slitted

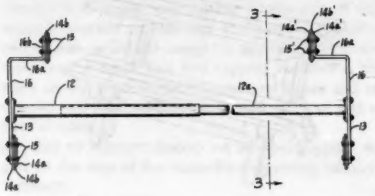
post for actuating said hook to release said capturing frame member from said rectangular frame member.

4,194,780

GUTTER CLEANER TOOL

Charles A. Dilley, 1624 Franklin Ave., Cleveland Heights, Ohio 46808

Filed Sep. 5, 1978, Ser. No. 939,430
Int. Cl.[2] A47F *13/06*
U.S. Cl. 294—19 R **3 Claims**



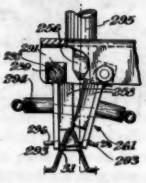
1. A gutter cleaning tool comprising a rigid handle extending longitudinally, a first arm fixed to one end of said handle and extending at right angles thereto, a first straight paddle fixed at the outer of said arm at right angles to said handle, said paddle generally conforming to the interior shape of a roof gutter, a second arm fixed to the same end of said handle and extending at right angles thereto and then bending at right angles to extend parallel to said handle for a short distance toward the operator's end of said handle and there supporting a second offset paddle at right angles to said handle, said arms being fixed at an angle of orientation, one to the other, such that one arm may enter its paddle into a gutter without interruption with said other paddle or with a roof supporting said gutter, whereby an operator may hold said handle generally parallel to a gutter with said straight paddle entered into said gutter and may pull said paddle in one direction longitudinally until a cross-strut in said gutter is engaged on one side, whereupon the operator may rotate said handle to lift said straight paddle out of said gutter and to cause said offset paddle to enter into said gutter on the same side of said cross-strut and pull the leaves under the cross-strut to the opposite side, after which the operator may rotate the handle to insert said straight paddle on said opposite side back of the leaves and so move along said gutter.

4,194,781

AUTOMATIC PACKING

Louie R. Lowery, Madison, N.J., assignor to Keyes Fibre Company, Waterville, Me.

Division of Ser. No. 719,846, Sep. 2, 1976. This application Oct. 27, 1977, Ser. No. 846,194
Int. Cl.[2] B65G *59/02*
U.S. Cl. 294—61 **4 Claims**



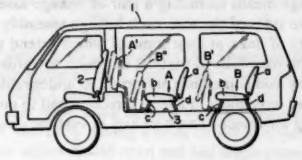
1. In a transfer carrier for gripping a molded fiber packing sheet having a raised rib structure, a set of jaws shaped to engage the rib structure, the jaws having gripping teeth that dig into the molded fiber of the rib structure when that structure is engaged by the jaws, opening structure connected to open the jaws when a gripped sheet is to be released, the jaws carrying release-assisting projections extending in the general direction in which the jaws open, to engage adjacent portions of the sheet when the jaws open and assure a positioning of the sheet that causes all the teeth to be pulled out of the molded fiber when the jaws are opened.

4,194,782

FOLDABLE SEAT STRUCTURES FOR AUTOMOBILES

Takahisa Itoh, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Dec. 12, 1978, Ser. No. 968,853
Claims priority, application Japan, Dec. 13, 1977, 52-167996[U]
Int. Cl.[2] B60N *1/02*
U.S. Cl. 296—65 R **7 Claims**



1. Automobile comprising a body which has a floor, front and rear seat means provided on the floor, said rear seat means including a plurality of seat assemblies arranged in a plurality of rows including a first row and a second row which is behind the first row, the seat assembly in the first row comprising a front leg structure carrying seat mat means and a rear leg structure carrying seat back rest means, said front leg structure being pivotably attached at lower end to the floor of the body, said rear leg structure having rearwardly extending link means, the seat assembly in the second row comprising a front leg structure having lower end pivotably connected with said rearwardly extending link means whereby the seat assembly in the first row can be folded by pivotably moving its front leg structure only after the seat assembly in the second row has been folded by turning the front leg structure of the second row seat assembly over the rearwardly extending link means.

4,194,783

WALL PROXIMITY CHAIRS AND HARDWARE THEREFOR

Izchak Cycowicz, Brooklyn, and Alfred Frimmet, Larchmont, both of N.Y., assignors to Mohasco Corporation, Amsterdam, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,544
Int. Cl.[2] A47C *1/02*; F16M *13/00*
U.S. Cl. 297—88 **9 Claims**

1. In a wall-proximity reclining chair of the type having
(A) a stationary base for supporting the chair on a floor;
(B) body-supporting means including a seat located generally above the base, and a backrest located generally rearwardly of the seat; and
(C) a movable armrest assembly mounted for movement relative to the base along a front-to-back horizontal longitudinal direction, and concomitantly somewhat along a generally vertical direction, said armrest assembly including
(1) a pair of armrests transversely spaced apart of each other along a lateral direction generally perpendicular to the front-to-back longitudinal direction, each armrest having an inner wall which faces towards the seat, and
(2) means for interconnecting the armrests for moving the latter jointly in response to manual urging on the armrests by a seated user;
the improvement comprising:

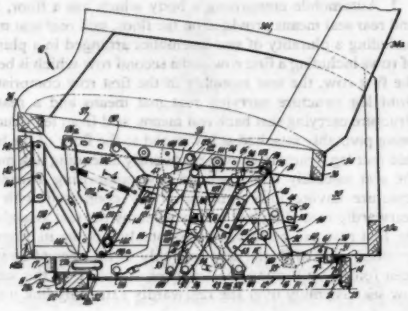
(a) a pair of base rails having base walls which extend both along the longitudinal and the vertical directions, said base walls being spaced apart of each other in lateral direction underneath the seat;

(b) linkage means interconnecting the armrests, the body-supporting means and the base rails, and operative for moving the body-supporting means along the longitudinal and vertical directions between

(i) an end-limiting upright position in which the seat is oriented in a sitting orientation and is spaced a predetermined distance away from a room wall behind the chair, and

(ii) an end-limiting fully-reclined position in which the seat is oriented in a different reclined orientation, and is spaced at a distance greater than said predetermined distance away from the room wall such that physical contact of the body-supporting means with the room wall is avoided,

said linkage means including a pair of linkage assemblies at opposite sides of the seat, each linkage assembly having a plurality of links, at least some of which extend upwardly from the base rails in vertical direction towards the seat, whereby said some links are prone to undesirable side-to-side play movement in lateral direction and to undesirable twisting movement about an axis in vertical direction;



(c) means for counteracting and minimizing the undesirable lateral side play and the twisting movements, including

(i) two pairs of sliding contact elements, each pair being mounted on a respective linkage assembly, said contact elements of each pair being spaced apart of each other in longitudinal direction,

(ii) said sliding contact elements having contact faces juxtaposed with the vertical base walls of the base rails for slidably contacting the base walls during movement of the linkage means, to thereby substantially reduce lateral side play and twisting movements; and

(d) adjusting means for moving in lateral direction the position of the contact face of one of said sliding contact elements relative to its juxtaposed vertical base wall, said adjusting means including

(i) a displaceable element operatively connected to said one sliding contact element, and

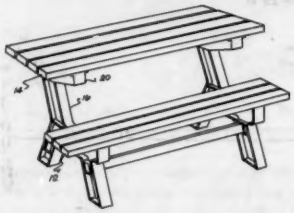
(ii) means for displacing the displaceable element in lateral direction to move the contact face of said one contact element into sliding abutting relationship with its juxtaposed vertical base wall when the body-supporting means is in its upright position, whereby the seat in its sitting orientation is particularly resistant to instability.

4,194,784

BENCH BACK REST CONVERTIBLE TO LOCKED TABLE TOP

Gerald A. Dostal, Fonda, and Richard S. Havlick, Gloversville, both of N.Y., assignors to N. A. Taylor Co., Inc., Gloversville, N.Y.

Filed Jan. 23, 1978, Ser. No. 871,701
Int. Cl.[2] A47B *85/04*
U.S. Cl. 297—126 **3 Claims**



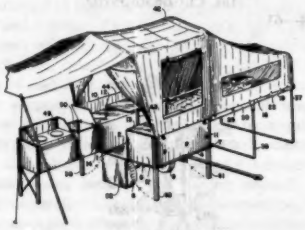
1. A locking device for use on an article of furniture, said article of furniture having frame means carrying a fixed seat member and a movable support member, said support member rotatably movable on said frame from a first non-locked backrest supporting position to a second locked table top position, said support member maintained in its first non-locked backrest supporting position by gravity, said support member maintained in its second locked table top position by said locking device, said locking device secured to said support member and comprising a box-shaped housing member rotatably movably carried on said frame means, wedging means loosely contained between said frame member and said housing member for rotational movement with said housing member, said wedging member rotatably and longitudinally movable from a first gravity maintained un-biased non-wedging position to a second wedging position to lock by wedging action said support member in its second position, said wedging action resulting from said wedging member being slidably moved longitudinally within said housing member to a position where it is wedged between said housing member and a planar portion of said frame member when said support member is in its second position.

4,194,785

CAMPER

Don Cox, and Gail Cox, both of Box 73, Sharon, Okla. 73857

Filed Aug. 1, 1978, Ser. No. 929,898
Int. Cl.[2] B60P *3/34*
U.S. Cl. 296—169 **1 Claim**



1. A camper adapted to be towed by a motorcycle, said camper comprising

a base member of substantially planar rectangular configuration having an oversurface, an undersurface, a first pair of spaced parallel sides and a second pair of spaced parallel sides perpendicular to the first pair of sides;

a pair of wheels rotatably mounted on the undersurface of the base member, said wheels being rotatable in planes parallel to the second pair of sides of said base member;

a pair of rectangular parallelepiped boxes affixed to the oversurface of the base member each extending along a corresponding one of the first pair of sides and extending from one of the second pair of sides to the other and each having a top and an open end at one of the second pair of sides selectively coverable by a door;

a bed support member covering the camper by resting on the tops of the boxes and extending therebetween when the camper is in transit and resting at one end of said bed support member on said tops at the other of said second pair of sides when the camper is assembled whereby in its assembled position said bed support member is substantially in the plane of the tops of said boxes and extends beyond said base member from said other of said second pair of sides;

a plurality of support devices on the bed support member and on the tops of the boxes for supporting tubular brace members;

a plurality of legs foldably mounted on the undersurface of the base member;

a plurality of tubular brace members removably supported by some of the support devices of the bed support member for maintaining said bed support member level above the ground;

a plurality of tubular generally arcuate tent support members removably supported by others of the support devices of the bed support member and by the support devices of the boxes for maintaining a tent above the base member and the bed support member; and

a cooking unit, a food chest, a cooling chest and a table top removably stored in said boxes.

4,194,786

SAFETY BELT ANCHORAGE ASSEMBLY

William J. Gilmore, Manitou Beach, Mich., assignor to Acco Industries Inc., Bridgeport, Conn.

Filed Nov. 29, 1977, Ser. No. 855,568
Int. Cl.[2] A62B *35/00*; B60R *21/10*
U.S. Cl. 297—468 **4 Claims**

1. In a car belt assembly of the type comprising flexible strap means extending from an anchorage around a person to be restrained, an anchorage assembly attached to a second anchorage, and coupling means for interconnecting said flexible strap and said anchorage assembly, the improvement wherein:

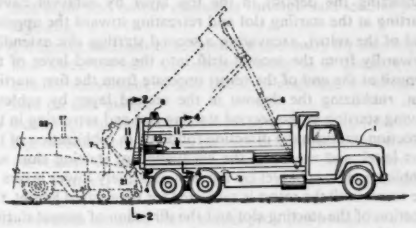
said anchorage assembly comprises an elongated composite member of a plurality of substantially planar and substantially parallel lengths of flexible metal cable substantially embedded in resilient plastic material, said assembly being oriented with the plane defined by said parallel cables in line with the front-to-back direction of the car and exhibiting sufficient flexibility in a direction perpendicular to said plane to permit ready deflection of said assembly in the perpendicular direction by the movement of such person and, at the same time, exhibiting sufficient stiffness in the direction within said plane as to permit one-handed interconnection of said coupling means.

4,194,787

DUMP BODY WITH INSIDE GATE

Leland C. Williamsen, Salt Lake City, Utah, assignor to Williamsen Truck Equipment Corporation, Salt Lake City, Utah

Filed Jan. 13, 1978, Ser. No. 869,142
Int. Cl.[2] B60P *1/16*
U.S. Cl. 298—23 M **1 Claim**



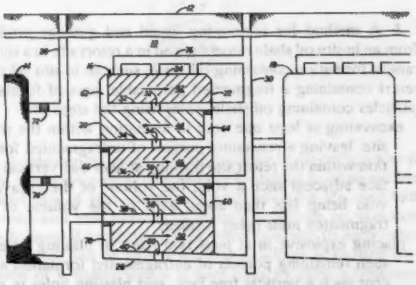
1. In a dump body of the type comprising an open top elongated body mounted on a frame with means for moving said body between a horizontal carry position and a tilted dump position, said body being defined by a bottom and upstanding sidewalls, said body having a front closed end and a rear open end, a gate adjacent said open end and hinge means for swinging said gate to open and close said open end, the improvement comprising said hinge means being located adjacent the top of said upstanding sidewalls and forward of said open end of said body, said gate being pivotally mounted to said hinge and shaped so that when in the closed position it is entirely contained between the sidewalls and bottom of said body with said open end of said body spaced rearwardly of said gate, the peripheral edge of said gate being substantially parallel to said bottom and sidewalls and said upstanding sidewalls diverge upwardly and outwardly relative to each other and there is provided lock means for selectively locking and releasing said gate, said lock means comprising openings in said opposite sidewalls at a location above the bottom and to the rear of said gate when the latter is in the closed position, a latch on the outside of each of said sidewalls adapted to move to and fro through said opening into and from the interior of said body respectively to hold and release said gate and means associated with each of said latches for selectively effecting movement thereof.

4,194,788

METHOD OF FORMING A RUBBLIZED IN-SITU RETORT

J. Blaine Miller, Englewood, Colo., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1978, Ser. No. 882,360
Int. Cl.[2] E21C *41/10*
U.S. Cl. 299—2 **15 Claims**



1. A method of constructing a rubblized in-situ retort in a

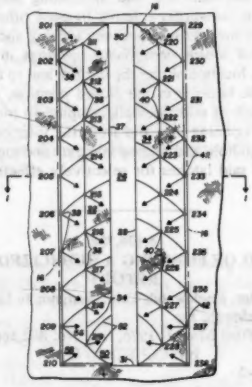
subsurface deposit of a carbonaceous material for the in-situ retorting of the deposit to produce a fluid fuel comprising driving through the deposit a plurality of vertically spaced, substantially horizontal withdrawal drifts, said drifts extending the full horizontal length of the desired in-situ retort to divide the retort into a plurality of superposed layers of the deposit, excavating a first starting slot extending upwardly from the top drift into the top layer of the deposit at one end of the retort, rubblizing the deposit in the top layer by sublevel caving starting at the starting slot and retreating toward the opposite end of the retort, excavating a second starting slot extending upwardly from the second drift into the second layer of the deposit at the end of the retort opposite from the first starting slot, rubblizing the deposit in the second layer by sublevel caving starting at the second starting slot and retreating in the direction opposite the direction followed in rubblization of the first level, and repeating the excavating of starting slots and rubblization by sublevel caving in successively lower layers of the retort until the retort is rubblized for the desired height, the location of the starting slot and the direction of retreat during the sublevel caving in each layer being opposite the location of the starting slot and the direction of retreat in the layer immediately above.

4,194,789

STAGGERED ARRAY OF EXPLOSIVES FOR FRAGMENTED OIL SHALE FORMATION TOWARD A VERTICAL FREE FACE

Irving G. Studebaker, and Ned M. Hutchins, both of Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Bakersfield, Calif.

Filed Jan. 18, 1979, Ser. No. 4,425
Int. Cl.[2] E21C *41/10*
U.S. Cl. 299—2 **31 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

excavating at least one void in formation within the retort site, leaving a remaining portion of unfragmented formation within the retort site forming at least one vertical free face adjacent such a void, the volume of the excavated void being less than about 25% of the volume of the fragmented mass being formed;

placing explosive in at least two rows of blasting holes in such remaining portion of unfragmented formation adjacent such a vertical free face, said blasting holes in each row being mutually spaced apart along the length of the void and longitudinally off-set from blasting holes in the next adjacent row;

detonating explosive in said blasting holes in a time delay sequence progressing along the length of the row of blasting holes for explosively expanding formation in said remaining portion of unfragmented formation toward said vertical free face for forming at least a portion of a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

establishing a combustion zone in an upper portion of the fragmented mass and advancing the combustion zone through the fragmented mass for producing liquid and gaseous products of retorting; and

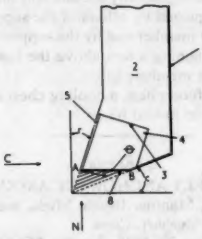
withdrawing liquid and gaseous products of retorting from a lower portion of the fragmented mass.

4,194,790

ROCK CUTTING TIP INSERTS

Peter Kenny, and Stanley N. Johnson, both of Lichfield, England, assignors to Coal Industry (Patents) Ltd., London, England

Filed Apr. 2, 1975, Ser. No. 564,640
Claims priority, application United Kingdom, Apr. 24, 1974, 17909/74; May 31, 1974, 24284/74
Int. Cl.[2] E21C *35/18;* E21B *9/36*
U.S. Cl. 299—79 **11 Claims**



1. A rock cutting tip insert for placing in a recess of a rock cutting tool, the tip insert comprising two separate continuous layers of similar composite material having different hardness, a first layer being a cutting margin of one hardness level and the second layer being a backing portion of material similar to the first layer having a second hardness level, of at least one thousand units on the Vickers Hardness scale, said first hardness level being at least one hundred units on the Vickers Hardness scale greater than said second hardness level, the first layer cutting margin being secured to the second layer backing portion, and the second layer backing portion being secured to the tool.

4,194,791

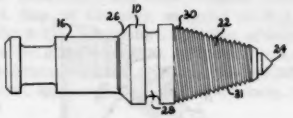
GROOVED EARTHWORKING BIT AND METHOD OF ENHANCING THE LIFE THEREOF

Robert H. Montgomery, Jr., Fishertown, and Seibert S. Oaks, Everett, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 779,077, Nov. 18, 1977, abandoned. This application Jun. 16, 1978, Ser. No. 915,908
Int. Cl.[2] E21C *35/18*
U.S. Cl. 299—86 **8 Claims**

1. An earthworking tool comprised of a parent material and having a rearward shank portion for mounting in a support block, a working portion fixed to said shank portion and extending forwardly of said shank portion for engagement with earth material, and a hard wear resistant insert mounted in the parent material of said working portion, grooves formed in and extending around the longitudinal periphery of said working

portion in proximity with said hard wear resistant insert, said grooves sized so that earth fines fill the groove and become



packed therein substantially reducing erosion of said parent material around the insert.

4,194,792

DECELERATION SENSING TYPE PROPORTIONING VALVE

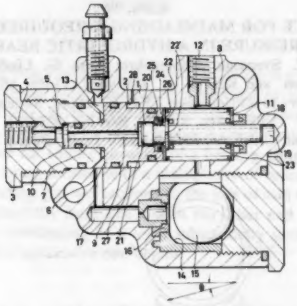
Toshifumi Maehara, Chichibu, Japan, assignor to Akebono Brake Industry Co. Ltd., Tokyo, Japan

Filed Oct. 26, 1978, Ser. No. 954,748

Claims priority, application Japan, Nov. 10, 1977, 52/135044; Jan. 23, 1978, 53/5991

Int. Cl.² B60T *8/14*

U.S. Cl. 303—24 F **10 Claims**



1. A deceleration sensing type proportioning valve adapted to be disposed between a fluid pressure source and a brake device on a vehicle for controlling fluid pressure communicated to said brake device from said pressure source when said vehicle decelerates above a given rate and the fluid pressure of said source exceeds a desired value, said proportioning valve comprising:

a valve body including therein an input chamber for receiving fluid from an outside pressure source, an output chamber for communicating said fluid with an outside device, an adjustment chamber, and a first fluid passageway extending between said input and adjustment chambers, said body having first and second diameter cylinders formed therein, said first diameter cylinder being in fluid communication with said adjustment chamber and said second diameter cylinder being in fluid communication with said input chamber;

a stepped adjustment piston having a second fluid passageway extending axially therethrough, and large and small diameter ends for slidably engaging said first and second diameter cylinders in sealing relationship therewith, respectively, so that the large diameter end of said piston is subjected to fluid pressure developed in said adjustment chamber and the small diameter end of said piston is subjected to fluid pressure developed in said input chamber wherein said piston is subjected to the difference between said adjustment and said input chamber pressures;

a valve seat formed in said second fluid passageway in said piston;

a plunger mounted for axial sliding movement within said valve body, one portion of said plunger confronting said piston to engage and disengage with said valve seat in response to fluid pressure communicated thereto from said output chamber through said second passageway, and another portion of said plunger being in fluid communication with said input chamber wherein said plunger is subjected to the difference between said output and said input chamber pressures to urge said plunger to engage said valve seat to prevent fluid communication between said input and output chambers through said second passageway;

a first spring mechanism mounted in said body for exerting a first force on said adjustment piston in a direction to counter movement of said piston in response to the pressure on said piston;

a second spring mechanism mounted in said body for exerting a second force on said plunger in a direction to counter movement of said plunger in response to the pressure on said plunger, thereby urging said plunger to disengage said valve seat;

deceleration sensitive valve means provided in said first fluid passageway for preventing fluid communication between said input and adjustment chambers when deceleration of said vehicle attains a predetermined value;

means for connecting said adjustment piston and said plunger so that said plunger moves together with said piston in a direction opposite to forces provided on said piston and said plunger by said first and second spring mechanisms when the pressure on said piston attains a given value;

said piston being moved in response to the pressure thereon by an amount corresponding to a desired turning point pressure, wherein said plunger engages and disengages said valve seat to control fluid pressure communicated to said output chamber when the input chamber fluid pressure exceeds said turning point pressure.

4,194,793

TELESCOPING GUIDE RAIL CONSTRUCTION

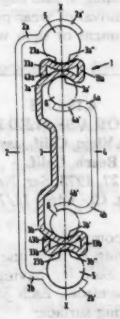
Hubert G. Offermans, Bunde, Netherlands, assignor to Thomas Regout N.V., Netherlands

Filed Sep. 1, 1977, Ser. No. 829,877

Claims priority, application Netherlands, Sep. 9, 1976, 7610020

Int. Cl.² F16C *21/00*

U.S. Cl. 308—3.8 **4 Claims**



1. A telescoping guide rail construction comprising a plurality of telescoping rails, substantially U-shaped in cross-section, at least one of said telescoping rails having a leg, and balls between said rails running in integral moldings on said rails, which integral moldings are pairwise concave to each other, and at least one of which integral moldings is formed by a portion of a flange which is bent over to form a bent over portion at the end of said leg of said at least one of said telescoping rails and is curved back at least substantially into

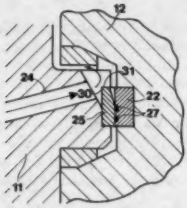
contact with said bent over portion of said leg of said at least one of said telescoping rails to form a curved back portion, wherein, in section, said curved-back portion has a free end which is bent back to provide a terminal edge having an extremity which is seated on said bent over portion of said leg of said at least one of said telescoping rails to provide support for one of which integral moldings.

4,194,794

AXIAL BEARING FOR ROTARY DRILL BIT

Knut Å. Kling, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed May 24, 1978, Ser. No. 909,117
Claims priority, application Sweden, Jun. 3, 1977, 7706480
Int. Cl.[2] F16C *19/00*
U.S. Cl. 308—3.8 **6 Claims**



1. In an unsealed rotary drill of the type comprising a bearing shaft, a roller rotatably mounted on the shaft, cutting inserts carried by the roller, bearing means for rotatably supporting the roller on the shaft, and a flushing channel terminating at an end surface of the bearing shaft for conducting cooling air to the bearing means; the improvement wherein said bearing means includes an axial bearing comprising an insert plate formed of a sintered hard metal alloy, and a supporting plate formed of a material which is less hard and less wear resistant than said metal alloy; said supporting plate containing a solid lubricant; said supporting plate and said insert plate presenting opposed bearing surfaces; said insert plate being mounted in said end surface of said bearing shaft such that an outer portion of a rear surface and a portion of a peripheral side edge surface of said insert plate are acted upon by cooling air from said flushing channel; said bearing surface of said insert plate including a recess terminating at said edge portion of said insert plate for permitting removal of wear products from the bearing surface and entrainment of such wear products into the cooling air.

4,194,795

SEAL PROTECTOR FOR A SEALED BEARING ROCK BIT

Dwight A. Rife, Mission Viejo, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Feb. 27, 1978, Ser. No. 881,618
Int. Cl.[2] F16C *33/76*
U.S. Cl. 308—8.2 **13 Claims**

1. A rotary rock bit comprising:

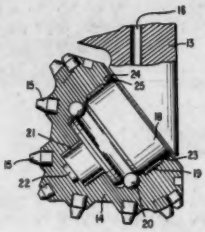
a main bit body having at least one leg extending downwardly therefrom, each leg having a journal projecting radially inward therefrom, each journal having an outwardly facing bearing surface;

a cutter rotatively mounted on each said leg journal, each cutter having an inwardly facing bearing surface engaging the bearing surface of said registering leg journal;

lubrication means for supplying lubricant to the bearing surfaces between each cutter and journal assembly;

an annular seal positioned within a gland between each cutter and journal assembly for preventing lubricant from leaking to the exterior of the assembly, said seal having a side which faces the exterior of the assembly;

an annular ring positioned within each gland adjacent said side of the seal, each annular ring extending the full depth of the respective gland that the ring is located in, thereby



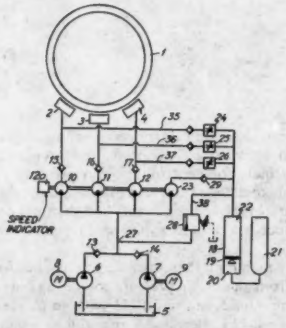
preventing exterior matter from passing therethrough to attack the seal.

4,194,796

DEVICE FOR MAINTAINING A REQUIRED LIQUID PRESSURE IN A HYDROSTATIC BEARING

Bengt H. Svensson, Köpingebro; Lars G. Lindberg, Smedjebacken, and Karl G. A. Hallstedt, Floda, all of Sweden, assignors to Aktiebolaget SKF, Goteborg, Sweden

Filed Sep. 5, 1978, Ser. No. 939,707
Int. Cl.[2] F16C *39/04;* F16N *29/04;* F01M *1/20*
U.S. Cl. 308—9 **4 Claims**



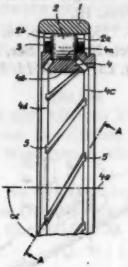
1. A device for maintaining a required liquid pressure in a hydrostatic bearing having a pump actuated liquid supply system during its slow-down time at pump failure, incorporating an accumulator (**18, 22**) connected in the liquid supply system of the bearing and having means (**19, 20, 21**) for maintaining a sufficient liquid pressure on the liquid contained in the accumulator, characterized thereby, that a portion of liquid in the system is led through a particular pressure generating member (**23, 32, 33**) in which it is given a pressure higher than the maximum liquid pressure in the bearing, that the accumulator (**18, 22**) is adapted to communicate with this portion of the pressure liquid whereby the liquid pressure inside the aummulator (**18, 22**) is, greater than the maximum liquid pressure in the bearing and that a part of said portion of the pressure liquid is led to the bearing via one or more constant flow valves (**24, 25, 26**) and the remainder to a lower pressure position (**27**) in the system via a return conduit provided with a one-way valve (**28**), adapted to open when the liquid pressure corresponds to said higher pressure.

4,194,797

BEARING-RACE RING WITH LUBRICANT AND COOLING CHANNELS

Karl Hörmann, Dittelbrunn, and Hans Weigand, Schweinfurt, both of Fed. Rep. of Germany, assignors to Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Division of Ser. No. 728,191, Sep. 30, 1976, Pat. No. 4,129,344.
This application May 24, 1978, Ser. No. 909,269
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, 2555923
Int. Cl.[2] F16C *1/24*
U.S. Cl. 308—187 7 Claims



1. A bearing ring comprising a circular body having a pair of axially-spaced ends, lying in planes perpendicular to the axis of said body, an inner surface and an outer surface opposite said inner surface, one of said surfaces having a configuration constituting a race for rolling elements of a bearing, the other of said surfaces being formed with a multiplicity of spaced-apart linearly extending grooves inclined to the axis of said ring and running substantially from one end to the other end thereof, each groove terminating at a level substantially identical to that at which a successive one begins.

4,194,798

SIDE CHANNEL COMPRESSOR WITH AT LEAST ONE BEARING ARRANGED AT THE HOUSING COVER OF THE SIDE CHANNEL COMPRESSOR

Siegfried Schönwald; Rudolf Schoning; Eberhard Breyer, all of Bad Neustadt, and Gert Hecht, Bremen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

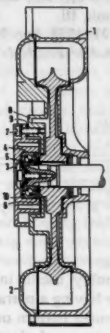
Filed Mar. 21, 1978, Ser. No. 888,734
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2713091
Int. Cl.[2] F04D *23/00*
U.S. Cl. 308—189 R 5 Claims

1. In a side channel ring compressor having a housing cover and a ball bearing arranged at said housing cover, the improvement comprising:

(a) a separate bearing cap, said bearing cap having a bore therein, said bearing arranged wholly within said bore such that the radial periphery of said bearing contacts only said bore, said bearing cap attached to said cover at a plurality of circumferentially spaced fastening locations;

(b) a centering rim on said housing cover; and

(c) a layer of insulation inserted between said cover and said bearing cup at said fastening locations, said layer being formed of a material which is a poor heat conductor so as to inhibit heat transfer from said cover to said cap, whereby the transfer of heat from said cover to said bearing will be minimized thereby avoiding a substantial temperature rise which could have a detrimental effect on lubricant for said bearing.

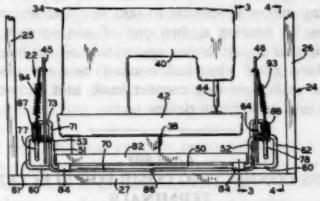


4,194,799

MOUNTING UNIT FOR FREE ARM SEWING MACHINE

Eugene M. White, 1624 Franklin Ave., Fort Wayne, Ind. 46808

Filed Jul. 5, 1978, Ser. No. 921,955
Int. Cl.[2] A47B *81/00, 29/00*
U.S. Cl. 312—21 30 Claims



1. A mounting mechanism for a free arm sewing machine comprising:

a frame,

a sewing machine support platform,

a first pivot arm connected to said frame about a first pivot for rotation about a first axis,

first means pivotally connecting said platform to said first pivot arm about a second pivot for rotation about a second axis parallel to said first axis,

a second pivot arm pivotally connected to said frame about a third pivot arm for rotation about a third axis parallel to said first and second axes,

second means pivotally connecting said platform to said second pivot arm about a fourth pivot for rotation about a fourth axis parallel to said first, second and third axes,

said platform being moveable relative to said frame selectively to an upper use position, a lower use position below said upper use position, and a storage position generally below said lower use position, and

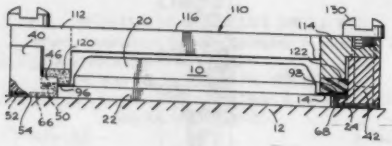
latch means for latching said platform in one of its upper use and lower use positions and for unlatching said platform when three of said pivots are urged toward mutually coplanar positions.

4,194,800

CONNECTOR ASSEMBLY FOR LEADLESS MICROCIRCUIT DEVICE

Weichien Chow, Park Forest, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 21, 1978, Ser. No. 879,905
Int. Cl.[2] H05K *1/12*
U.S. Cl. 339—17 CF **14 Claims**



1. A connector assembly useful in combination with an integrated circuit device having a plurality of conductive pads arranged in a predetermined pattern on a substantially planar surface thereof for mounting and electrically connecting said device to a circuit board also having a plurality of conductive pads arranged in a predetermined pattern thereon, said connector assembly comprising:

a first contact bank comprised of a plurality of electrical contacts electrically connected to said circuit board pads;

a first elongated anchor plate secured to said circuit board physically engaging and supporting said first contact bank relative to said circuit board;

a second elongated anchor plate secured to said circuit board and spaced from said first anchor plate by a distance sufficient to accommodate said circuit device therebetween;

a second contact bank comprised of a plurality of elongated electrical contacts disposed so as to bridge the spacing between said first contact bank and said circuit device pads; and

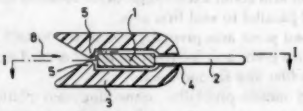
clamping means attachable to said first and second anchor plates for bearing against one of said contact banks to clamp said circuit device against said circuit board and to produce good electrical contact between said circuit board pads, said first contact bank, said second contact bank and said circuit device pads.

4,194,801

CROSS-CONNECTING COMB FOR ELECTRICAL TERMINALS

Arno Fitzler, Herford, and Hans-Herbert Kordt, Osterode, both of Fed. Rep. of Germany, assignors to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,983
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 7723993[U]
Int. Cl.[2] H01R *13/48, 31/08*
U.S. Cl. 339—19 **3 Claims**



1. A comb for making electrical cross-connection between electrical terminals, said comb comprising

(a) a multiplicity of metal teeth and a metal back interconnecting said teeth, and

(b) a unitary sheath of resilient insulating plastic material enclosing the back of said comb, said sheath comprising

(i) an extruded strip having a cross section in the shape of a "U" and provided with apertures at one end of the cross section through which apertures said teeth project, and

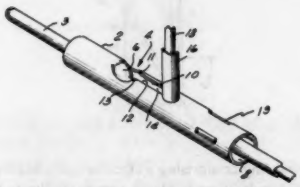
(ii) an integral locking rib of ratchet-tooth cross section extending along the inner surface of at least one leg of the "U" adjacent to the free end of said leg, the legs of the "U" being deflectable for permitting insertion of said back, and said rib engaging behind said back due to the resilience of said sheath, for retaining said back within said sheath.

4,194,802

INSULATION PIERCING CONTACTS AND CONNECTORS

Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 723,158, Sep. 14, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,365
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—97 P **15 Claims**



1. An electrical contact member for termination of an insulation covered electrical conductor, comprising:

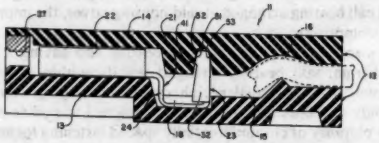
an axially extending peripherally closed metal tube including a wall portion, and insulation-opening means disposed axially within said wall portion and including a slot extending radially through said wall portion for exposing and providing electrical engagement between the conductor and said wall portion, said insulation-opening means including axially opposed closed ends and an entry opening adjacent said slot for passage of the conductor radially through said wall portion of said tube, said wall portion including axially extending edges partially forming said slot and continuously integral with said closed ends for reducing the tendency of said slot to open wider when the insulated conductor is introduced into engagement therewith, said wall portion including an inner section adjacent said slot and an entry ramp for angular deflection of the conductor for positioning the conductor in said section and through said wall portion.

4,194,803

CONNECTOR FOR FLAT RIBBON CABLE

David A. Hatch, Sherborn, Mass., assignor to PINTEK, Inc., Newton Upper Falls, Mass.

Filed May 15, 1978, Ser. No. 906,055
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—99 R **21 Claims**



15. A connector for terminating a plurality of insulated electrical conductors, said connector comprising:

a housing means defining a slot for receiving the ends of the

conductors, said housing comprising a base defining a row of contact receptacles and a cover defining catch means having catch portions aligned with said receptacles; and

a plurality of contacts each retained by one of said receptacles and comprising spaced apart cutting edges that define a conductor slot for receiving a different one of the conductors, said cutting edges being adapted and arranged to penetrate the insulation surrounding the received conductor and to make electrical contact therewith, each of said contacts further comprising a latch means with engaging surface means for engaging said catch means so as to fasten said base to said cover, and wherein said catch means and engaging surface means are shaped and arranged such that the forces produced in response to engagement therebetween are oriented so as to have substantially no tendency to cause relative movement between said cutting edges.

4,194,804

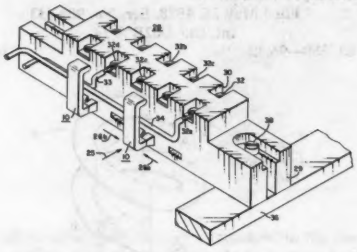
WIRE RETAINING FINGER

Angelo N. Vinch, Warren, and Anthony G. Schad, Troy, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 576,933, May 12, 1975, abandoned. This application Oct. 28, 1976, Ser. No. 736,293

Int. Cl.[2] H01R *9/22, 13/58*

U.S. Cl. 339—103 M **4 Claims**



1. Electrical apparatus which is interconnectable with an electrical conductor, comprising:

(a) an elongated terminal board having a flat side surface and a flat front surface which is angularly disposed from said side surface; and

(b) a plurality of retaining fingers each of which is independently detachably attached to and spaced longitudinally along said side surface of said terminal board, said retaining fingers and adjacent portions of said side surface of said terminal board structurally cooperating to form partially enclosed regions which are perpendicular to the plane of said side surface and the plane of said front surface and through which said conductor is extendable for channeling said conductor, said terminal board having terminals along said front surface for connection with said conductor.

4,194,805

ELECTRICAL CONTACTING ELEMENT

George E. Ayer, Endicott, and Hurley J. Blakeney, Gilbertsville, both of N.Y., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 538,475, Jan. 6, 1975, abandoned, which is a continuation of Ser. No. 345,713, Mar. 28, 1973, abandoned. This application Feb. 6, 1976, Ser. No. 655,723

Int. Cl.[2] H01R *13/40, 13/62*

U.S. Cl. 339—107 **2 Claims**

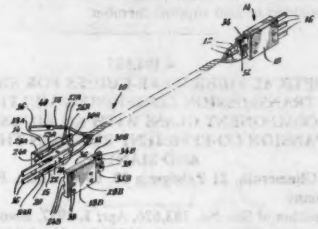
1. An electrical connecting element comprising

a thin, generally flat insulating housing including longitudinally disposed forward and rear portions,

at least two electrical contacts secured in said forward portion and extending forwardly therefrom for connection to a mating connector,

the rear portion including a perimeter, a thinned, longitudinally-projecting portion within said perimeter including at least two longitudinal grooves laterally separated for receiving a pair of conductors and strain relief means disposed within each groove, and element removal means for removing said element from said mating connector and laterally disposed apart from said grooves, said removal means including at least one rearwardly-covered lateral opening accessible within said perimeter by lateral insertion of a tool into said opening without interference by said conductors, said housing including

first and second housing members each formed on an insulating material, said members having mating sides which are



fitted together to form the members into a housing for the element, said first member having a plurality of pins projecting from the mating side thereof, said second member having a hole therethrough for each of said pins, the length of said pins and the relative positions of said pins and holes being such that each pin passes through a corresponding hole and is exposed on the side of said second member opposite its mating side, the portion of each pin exposed beyond the second member being cold-flow expanded to hold the members together, at least one of said members having one or more grooves formed in its mating side,

one of said electrical contacts being positioned and held in each of said grooves, at least one of said contacts having at least one hole formed therethrough.

and at least one of said pins being positioned to pass through a hole of a contact, when the element is fully assembled, to hold the contact in the housing.

4,194,806

CONNECTOR

Herbert J. Macemon, Versailles, Ky., assignor to Kuhlman Corporation, Troy, Mich.

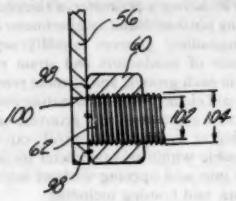
Filed Dec. 12, 1975, Ser. No. 640,011

Int. Cl.[2] H01R *11/08*

U.S. Cl. 339—263 R **4 Claims**

1. A connector comprising a unit having a threaded male member of a preselected hardness and ductility and having a male thread on a portion thereof, said male thread having preselected root and major diameters, a female member having a first internally threaded portion with a female thread accepting and mating with said male thread, and means effective upon the threading of said threaded male member through and beyond said first portion for producing an axial force tending to force surfaces of said male thread into forceable engagement with surfaces of said female thread and for limitedly increasing the torque required to further threadedly advance said male member through said first portion to a value greater than a first preselected value but less than a second larger preselected value comprising a second portion of said female member

having a bore beyond and coaxial with said internally threaded portion and of a diameter at least as large as said preselected root diameter, and smaller than said major diameter, said second portion being of greater hardness and lesser ductility than



said preselected hardness and ductility, said first internally threaded portion being a weld nut, said second portion being a support member for supporting said weld nut, said weld nut being welded to said support member.

4,194,807

OPTICAL FIBER WAVE-GUIDES FOR SIGNAL TRANSMISSION COMPRISING MULTIPLE COMPONENT GLASS WITH AN ADJUSTED EXPANSION CO-EFFICIENT BETWEEN THE CORE AND MANTLE

Georg Gliemeroth, 21 Zeisigweg 18, 6500 Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 783,626, Apr. 1, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,310

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615534

Int. Cl.² G02B 5/14

U.S. Cl. 350—96.31 **7 Claims**

1. Optical fiber wave-guide for signal transmission whose linear thermal expansion coefficient in all of the fiber elements lies above 15×10^{-7}/°C. characterized in that the optical fiber wave-guide consists of an outer mantle which is composed of the following components:

Component	Weight %
SiO_2	51–92
$\Sigma\ Al_2O_3 + ZrO_2 + La_2O_3$ + $TiO_2 + B_2O_3 + P_2O_5$	1–40
P_2O_5	0–5
B_2O_3	0–26
Al_2O_3	0–28
ZrO_2	0–5
Alkali Oxide	
Σ + Alkaline Earth Oxide	2–40
BaO	0–7
CaO	0–10
MgO	0–9
PbO	0–6
ZnO	0–8
La_2O_3	0–6
Na_2O	0–12
K_2O	0–8
Li_2O	0–4

which is silicate glass drawn from a melt, and has a linear thermal expansion coefficient which lies between 15 and 120×10^{-7}/°C., and the optical fiber wave-guide has a second, inner SiO_2-free mantle which is composed of the following components:

Component	Weight %
GeO_2	50–100
P_2O_5	0–45
B_2O_3	0–20

-continued

Component	Weight %
Al_2O_3	0–12

and corresponds in its linear thermal expansion coefficient to that of the outer mantle with a tolerance of $\pm5\times10^{-7}$/°C., and the optical fiber wave-guide has an inner, SiO_2-free core, which is composed of 50–99 weight percent of GeO_2 and at least two oxides selected from the group consisting of Sb_2O_3, Al_2O_3, B_2O_3, As_2O_3, BaO, PbO, alkali oxide, alkaline earth oxide, La_2O_3, SnO_2, TiO_2, WO_3, ZnO, ZrO_2, and Ga_2O_3, and characterized in that the inner mantle and the core are produced as an inner layering on the inside surface of a silicate glass tube by vapor deposition process from the gas phase, characterized in that the refractive index n_d in the total vapor deposited inner layer lies above 1.55 and increases from the outside to the inside of the inner layer, which inner layered tube is collapsed to a preform and the preform is drawn to a fiber and the core has a refractive index gradient which corresponds to the formula for a parabola with an exponent between 1.7 and 2.1.

4,194,808

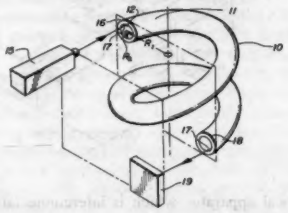
WAVE GUIDE FOR SURFACE WAVE TRANSMISSION OF LASER RADIATION

Michel E. Marhic, Evanston; Max Epstein, Highland Park, and Larry I. Kwan, Skokie, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed May 26, 1978, Ser. No. 909,633

Int. Cl.² G02B 5/14

U.S. Cl. 350—96.32 **14 Claims**



1. A wave guide for surface wave transmission of a beam of laser radiation having a wavelength of about 1 μm to about 2000 μm, comprising

an elongated generally concave channel having a radius of curvature R_1 and a wave reflective inner surface,

said channel having a generally semi oval transverse cross-section with an internal radius R_2, wherein R_2 is less than R_1 and R_1 is less than about 48 meters;

whereby spatial mode coherence is preserved during transmission of laser radiation through said wave guide.

4,194,809

MOTION REFLECTOR

James V. Campagna, Jr., North Olmsted, Ohio, assignor to Motion Reflector Industries, Inc., North Olmsted, Ohio

Filed Oct. 14, 1977, Ser. No. 842,281

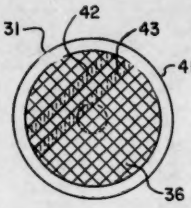
Int. Cl.² G02B 5/12

U.S. Cl. 350—97 **2 Claims**

1. A motion reflector for improved safety which comprises:

(A) a reflecting device having disposed at the edge thereof at least one first non-reflective, dark-colored area and at least one first highly visible area of a fluorescent color, the reflecting device being made of a lenticular material, the first highly visible area of a fluorescent color being disposed to be viewed in one aspect, and a second highly

visible area of a fluorescent color being disposed to be viewed in another aspect;



(B) flexible metal attachment means affixed to the reflecting device; and

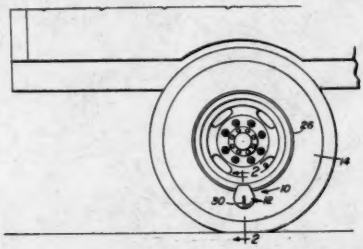
(C) means for affixing the attachment means to an object.

4,194,810

TRUCK TIRE SAFETY REFLECTOR

Dennis E. Eller, Algona, Iowa, assignor to Donald J. Hess, Clear Lake, Iowa, a part interest

Filed Oct. 23, 1978, Ser. No. 954,569
Int. Cl.[2] G02B *17/02*
U.S. Cl. 350—99 **7 Claims**



1. A safety reflector device for attachment to the rim of a wheeled vehicle comprising: a main body portion having a reflective coating connected thereto; a clip means attached to the body portion for connection to the rim of a wheeled vehicle to hold the body portion against the tire of the wheeled vehicle, said clip means comprising a bulge connected to said body portion and a resilient curved member coaxial with said bulge for insertion behind said rim to hold said rim betweeen said resilient member and said bulge; and a substantially flat reflective member connected to the body portion and extending laterally from the body portion for providing reflections in a plane parallel with the longitudinal dimension of the wheeled vehicle.

4,194,811

REMOTELY CONTROLLED ELECTROMAGNETIC OPTICAL FOCUSING ASSEMBLY

James D. Barry, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 3, 1978, Ser. No. 902,523
Int. Cl.[2] G02B *7/04*
U.S. Cl. 350—255 **2 Claims**

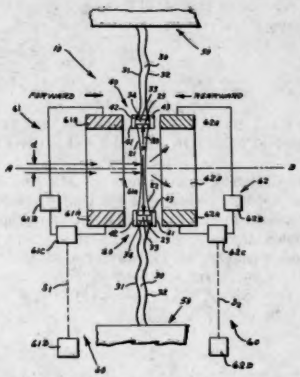
1. A remotely controlled electromagnetic optical focusing assembly, adapted for use with a collimated light beam having a preselected diameter, comprising:

a. a lens having a first side, a second side, a circumference, and a diameter in excess of three times larger than the diameter of said light beam, wherein said lens is disposed in optical and also in geometric alignment with said light beam;

b. a diaphragm made of opaque resilient material and having a first side, a second side, and a circular aperture with a circumference adjacent to and encircling said circumference of said lens;

c. magnetic means for interconnecting said diaphragm and said lens, wherein this means includes a ring-like component made of magnetic material interconnecting said diaphragm and said lens which further includes:

(1) a first metallic circular strip connected to a portion of said first side of said lens, and also connected to a portion of said first side of said diaphragm, thereby covering said circumference of said aperture of said dia-



phragm, and also covering said circumference of said lens;

(2) and, a second metallic circular strip connected to a portion of said second side of said lens, and also connected to a portion of said second side of said diaphragm, with said second metallic circular strip in registration with said first metallic circular strip;

d. means for supporting said diaphragm, said lens, and said interconnecting means;

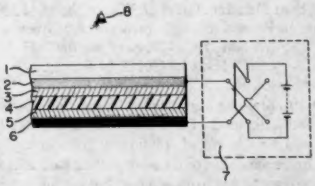
e. and, means for remotely and selectively causing a translational movement of said lens in a predetermined direction.

4,194,812

ELECTROCHROMIC DEVICE

Toshitami Hara, Tokyo; Yoshioki Hajimoto, Chofu; Yoshiaki Shirato, and Massaki Matsushima, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha Toshitama Hara, Tokyo, Japan

Filed Jul. 2, 1976, Ser. No. 701,987
Claims priority, application Japan, Jul. 3, 1975, 50-82272
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.[2] G02F *1/17*
U.S. Cl. 350—357 **19 Claims**



1. An electrochromic device which comprises an electrochromic layer comprising a transition metal compound sand-

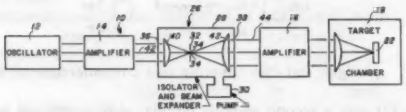
wiched in between a first auxiliary electrochromic layer and a second auxiliary electrochromic layer, and each of the auxiliary electrochromic layers comprising at least one metal compound containing at least one metal different from the metal in the transition metal compound in the electrochromic layer, and the difference in electro-negativity between both metals being not more than 0.4 the thus sandwiched electrochromic layers being further sandwiched between opposed counter electrodes, at least one of said counter electrodes being light transmissive and each of said counter electrodes directly contacting the auxiliary electrochromic layer being a metallic electrode and electric current necessary for color forming of the electrochromic layer being capable of flowing through both auxiliary electrochromic layers.

4,194,813

VACUUM APERTURE ISOLATOR FOR RETROREFLECTION FROM LASER-IRRADIATED TARGET

Robert F. Benjamin, and Kenneth B. Mitchell, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 13, 1978, Ser. No. 951,203
Int. Cl.[2] G02F 1/00
U.S. Cl. 350—363 **5 Claims**



1. A structure for inhibiting retroreflection in a laser system to eliminate retropulse damage to optical components of said system, said structure comprising:

a vacuum chamber having elements transparent to radiation of the frequency to be utilized disposed at either end of a laser beam path through said chamber;

an aperture containing disc disposed in said chamber with the aperture thereof being on said beam path;

means for converging light from a laser beam traveling said beam path onto said aperture, said aperture being just sufficiently small that the beam damages its edges, thereby creating a plasma for refracting any retroreflected radiation from a laser target away from the beam path; and

means for recollimating the portion of the beam passing through said aperture.

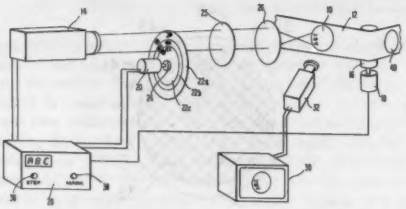
4,194,814

TRANSPARENT OPTHALMIC LENS HAVING ENGRAVED SURFACE INDICIA

David J. Fischer, Sarasota; James A. McCandless, St. Petersburg, both of Fla., and James D. Hager, Santa Monica, Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,133
Int. Cl.[2] G02C 7/04
U.S. Cl. 351—160 R **10 Claims**

1. An ophthalmic lens adapted to be placed in direct contact with eye tissue formed of a transparent crosslinked polymer material, said lens being characterized by identifying indicia engraved in a surface thereof by subjecting said lens to a beam of radiation emerging from a laser having an intensity and wavelength at least sufficient to sublimate said polymer and form depressions in said lens surface to a depth less than the thickness of said lens, said lens having a smooth surface of unsublimated polymer material surrounding said depressions, and by varying in a predetermined manner the point at which



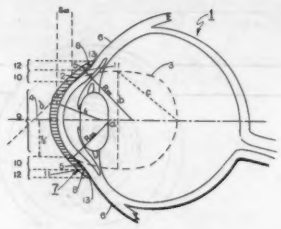
said laser beam impinges upon said lens surfaces to engrave said identifying indicia in said lens surface.

4,194,815

SEMI-SCLERAL CONTACT LENS

Wayne E. Trombley, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 28, 1978, Ser. No. 919,651
Int. Cl.[2] G02C 7/04
U.S. Cl. 351—160 R **12 Claims**



1. A semi-scleral contact lens having an interior surface shaped relative to the topography of an individual eyeball so that the lens exhibits central contact and edge contact with tearfilm clearance therebetween and tear exchange with blinking, the lens comprising:

(a) an optical zone which is the spherical equivalent of the radius of curvature (k) of the cornea at its optical centerline and the corneal dimensional diameter (y), the optical zone having a sagittal depth described by the formula

$$S_{0z} = a - \sqrt{a^2 - \frac{y^2}{Sf}}$$

where a is k/Sf, Sf is $1\text{-}E^2$, and E is the degree of eccentricity of the ellipse described by the cornea, and the optical zone having a radius of curvature described by the formula

$$R_{0z} = \frac{\frac{y^2}{S_{0z}} + S_{0z}}{2};$$

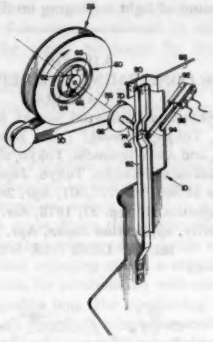
(b) a conic section between the circumference of the optical zone and a selected point over the limbus, the conoid being tangent to the optical zone at its circumference; and

(c) a curved peripheral section between the selected point and the edge of the lens, the peripheral section having a radius of curvature which is perpendicular to the conoid section at the selected point and which extends from the selected point to the optical centerline of the cornea.

4,194,816
HIGH SPEED ROTATING DRIVE TERMINATION SYSTEM

Bernard W. Ruck, Milford; Joseph A. Stella, Peabody, and Edward K. Bullock, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 7, 1977, Ser. No. 848,815
Int. Cl.[2] G03C *11/00*
U.S. Cl. 352—130 17 Claims



1. Apparatus comprising:

a cassette including:

a first rotatably mounted spool;

a second rotatably mounted spool, said second spool including means for engaging a shaft, said engaging means including a first abutment surface extending outwardly of one side of said second spool and a second abutment surface extending outwardly from said one side of said second spool and canted at an angle with respect to its axis of rotation so as to face said second spool's first abutment surface in spaced relationship around its said axis of rotation with respect thereto;

means for depositing a coating of fluid on said elongated strip of material during at least its first advancement from said second spool to said first spool; and

an elongated strip of material having its opposite ends respectively connected to the first and second spools with a major portion thereof coiled around one of said spools; and

a cassette operating device including:

means for receiving and mounting the cassette;

a rotatably mounted drive assembly engageable with said first spool;

a rotatably mounted shaft engageable with said second spool, said shaft including a first abutment surface extending outwardly thereof in a manner so as to be engageable with said first abutment surface of said second spool and caused to be rotated in a first direction when said drive assembly is actuated to effect the advancement of portions of said strip of material coiled around said second spool onto and around said first spool, said first abutment surface of said second spool and said first abutment surface of said shaft being configured so that the former does not exert force on the latter at such times tending to urge said shaft axially away from said second spool, and a second abutment surface extending outwardly from said shaft at an angle canted with respect to its axis of rotation so as to face said shaft's first abutment surface in radially spaced relationship around its said axis of rotation with respect thereto, said second abutment surface of said second spool thus serving to exert forces against said second abutment surface of said shaft tending to displace said shaft away from said second spool in a direction axially thereof when substantially all of said strip of material has been uncoiled from said second spool causing the termination of rotation of said second spool and inertial forces in said shaft continue to effect rotational movement of said shaft in said first direction displacing its said second abutment surface into engagement with said second abutment surface of said second spool;

means for mounting said shaft for axial displacement between a first position wherein said first abutment surface thereof and said first abutment surface of said second spool are operably disposed for purposes of effecting driving engagement therebetween and a second position wherein said shaft is axially disposed a further distance away from the other side of said second spool, and for yieldably restraining said shaft in its said first position, the forces acting between said second abutment surfaces of said second spool and said shaft when said second spool has ceased rotating and the inertia of said shaft causes said shaft to continue to rotate in said first direction being effective to displace said shaft from its said first position towards its said second position;

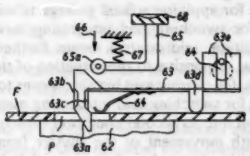
motor means energizable by a source of electrical energy for selectively imparting torque forces on said drive assembly to effect the rotation thereof about its axis of rotation in a direction advancing portions of said strip of material coiled around said second spool onto and around said first spool thereby imparting a rotation of said second spool about its said axis of rotation in said first direction thereby effecting deposition of said fluid upon said elongated strip; and

means responsive to the displacement of said shaft from its said first position into its said second position for terminating said torque forces thereby minimizing any tensioning forces on the elongated strip after such advancement has been completed, thereby also minimizing contact between adjacent convolutions of the strip wound upon said first spool following the deposition of the fluid thereon.

4,194,817
MARKING OF INTERSPERSED MOTION-PICTURE SCENES AND STILL SHOTS WITH INTERRUPT-TRANSPORT MARKINGS

Frank Staudacher, Haan; Otto Stemme, Münich; Peter Lermann, Narring; Werner Went, Leverkusen; Volkmar Stenzenberger, Unterhaching; Eberhard Herzig, Cologne; Friedrich Stumpf, Münich; Thomas Scheller, Münich; Jürgen Sylla, Münich; Friedrich Winkler, and Johann Zanner, both of Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 950,127
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746036
Int. Cl.[2] G03B *21/38*
U.S. Cl. 352—169 3 Claims



1. In an apparatus for recording motion pictures on a recording medium, in combination, means for recording successive image frames on successive portions of the recording medium; and marking means operable by the user for providing the recording medium with interrupt-transport markings correlated with predetermined image frames, whereby when the

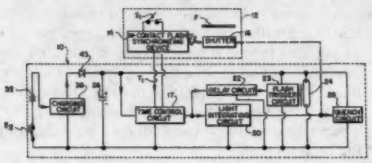
recording medium is run through a reproducing apparatus provided with a marking detector the detection of the interrupt-transport markings can be used to interrupt recording medium transport and persistently reproduce the predetermined image frames as still images, the recording medium being photographic motion-picture film provided with film-frame perfomations running alongside one longitudinal edge of the film, the marking means comprising cutting means for making cuts in the film extending transversely to the direction of elongation of the film from such perforations to the nearer of the two longitudinal edges of the film, the apparatus including a film transport mechanism, the film transport mechanism including a film transport claw which enters into film perforations for intermittent transport of the film, the cutting means being provided on the film transport claw and normally not cutting the film, and furthermore including means for displacing the transport claw into a position in which the cutting means cuts the film and produces an interrupt-transport frame marking.

4,194,818

ELECTRONIC FLASH UNIT FOR FILL-FLASH PHOTOGRAPHY

Lawrence J. Matteson, and David J. Shonts, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,398
Int. Cl.[2] G03B *15/05*
U.S. Cl. 354—33 **4 Claims**



1. In electronic flash apparatus for use with a camera, the camera including (1) a movable shutter having a lead time defined by the interval required for the shutter to move from (i) a light-blocking position, to (ii) a fully-opened light-unblocking position, and (2) synchronizing means actuatable for producing artificial illumination in synchronization with actuation of the shutter, said electronic flash apparatus having (1) a flashtube for producing light to illuminate a scene, and (2) means operable, upon energization thereof, for triggering said flashtube to produce such light, the improvement comprising:

(a) integrating means having (1) a first condition in which it is non-responsive to light, and (2) a second condition in which it is responsive to light, said integrating means being exposable to light to produce a terminating signal when said integrating means responds to a predetermined amount of light representative of a desired exposure;

(b) control means, coupled to said integrating means, including bistable means having (1) a first state for maintaining said integrating means in its first condition, and (2) a second state for applying a fixed voltage to said integrating means for switching said integrating means into its second condition, said control means further including timing means, responsive to the actuation of the synchronizing means, for causing said bistable means to assume its second state for switching said integrating means from its first condition into its second condition substantially concurrently with movement of the shutter from its light-blocking position toward its fully-opened light-unblocking position, thereby causing said integrating means to commence to sense light substantially concurrently with impingement of scene light on film in the camera;

(c) time delay means, coupled to said bistable means and to said triggering means, for energizing said triggering means following the switching of said integrating means into its second condition, said time delay means providing a time delay which commences when said bistable means assumes its second state and which is at least as great as the lead time of the shutter such that said triggering means becomes energized only when the shutter is in its fully-opened light-unblocking position; and

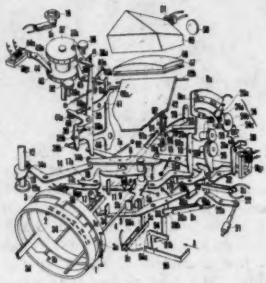
(d) means, coupled to said integrating means, responsive to said terminating signal for preventing further discharge of said flashtube, whereby the light transmitted by said electronic flash apparatus is controlled in accordance with the total amount of light impinging on film in the camera.

4,194,819

DEVICE FOR CONFIRMING THE DEPTH OF FOCUS OF A CAMERA

Fumio Ito, Yokohama; Masayuki Suzuki, Kawasaki; Hiroyashu Murakami, Tokyo; Nobuaki Date, Kawasaki; Tadashi Ito, Yokohama, and Akio Sunouchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 791,001, Apr. 26, 1977, abandoned.
This application Sep. 27, 1978, Ser. No. 946,167
Claims priority, application Japan, Apr. 28, 1976, 51-49108
Int. Cl.[2] G03B *7/08, 9/02*
U.S. Cl. 354—43 **6 Claims**



1. A camera having a device for confirming the depth of focus in combination with an interchangeable lens, said combination comprising:

(1) an interchangeable lens having a diaphragm device which is provided with aperture adjusting means including:

(a) an aperture ring which is rotatably mounted on an outer ring portion of the interchangeable lens and is provided with aperture value graduations for manual adjustment and an automatic exposure position mark; and

(b) aperture preset means which engages with the diaphragm device and the aperture ring for presetting the diaphragm device by the aid of a first urging member at a value corresponding to an aperture value graduation at which the aperture ring is set;

(2) a camera which permits mounting the interchangeable lens thereon including:

(a) automatic exposure control means provided with computing means for computing an aperture value by receiving information on the brightness of an object to be photographed and information on a setting made for photographing;

(b) automatic exposure aperture control means including an intermediate member which holds said aperture preset means at a predetermined position against an urging force of said first urging member, engaging means interlocked with an intermediate member through a second urging member, which serves to hold said intermediate member at a predetermined position, converting means which produces an electrical signal corresponding to the degree of movement of the engag-

ing means, locking means for locking the engaging means at a predetermined position and stopping means for stopping the movement of the engaging means, said exposure aperture control means being arranged to move said aperture preset means to a position corresponding to the degree of movement of the engaging means;

(c) release means for releasing said locking means in response to a release action of the camera;

(d) electrical control means for producing a control signal on the basis of the signal produced by said computing means and the signal produced by the converting means;

(e) electromagnetic means which is electrically connected to said electrical control means and engages with said stop means for actuating the stop means in response to said control signal in such a manner as to stop the engaging means at a position corresponding to a computation output produced by said computing means; and

(f) automatic aperture means provided with actuating means which stops down the diaphragm device to a position where the aperture preset means which is interlocked with said engaging means is movable; and

(3) confirming means for combination with said camera and said interchangeable lens, the confirming means being provided with an operation member operable from outside of the camera, said operation member being arranged to move and cause said intermediate member against the urging force of said second urging member from said predetermined position to follow the movement of the aperture preset means and, at the same time, to operate said actuating means to stop a diaphragm device down to a setting value of aperture.

4,194,820

SPRING SERVO TYPE APERTURE CONTROL DEVICE IN A CAMERA

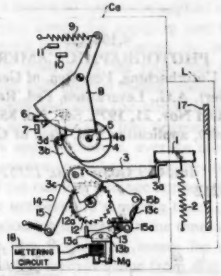
Yoshiyuki Nakano; Akihiko Sato, and Yoshitaka Araki, all of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,685

Claims priority, application Japan, Oct. 17, 1977, 52/123589

Int. Cl.[2] G03B *7/08, 9/02*

U.S. Cl. 354—43 **2 Claims**



1. An aperture control device in a camera having mounted thereon a lens having

(a) an aperture mechanism including an aperture blade and determining the aperture by varying the position of said aperture blade;

(b) an aperture lever connected to said aperture mechanism and displaceable between a first position for rendering said aperture blade to an open aperture and a second position for rendering said aperture blade to a minimum aperture; and

(c) a member for biasing said aperture lever toward said second position; said aperture control device comprising:

(d) a control member engaged with said aperture lever and movable between a third position and a fourth position corresponding to said first position and said second position, respectively;

(e) a spring member storing a drive force by shutter charge and giving forth the stored drive force by shutter release;

(f) a cam member disposed between said control member and said spring member and rotatable by the drive force of said spring member upon shutter release to drive said control member at a uniform velocity from said third position to said fourth position, said aperture lever stopping down the aperture in response to the movement of said control member from said third position to said fourth position;

(g) metering means including an electromagnetic means for blocking the movement of said control member when the quantity of light transmitted through the aperture being stopped down has reached a predetermined value; and

(h) a member adapted to return said control member to said third position after completion of exposure.

4,194,821

CAMERA WITH FILM-UNIT DRIVE

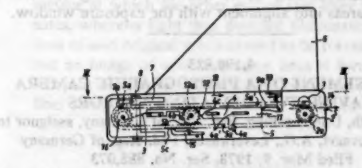
Otto Stemme, Münich; Peter Lermann, Narring, and Gunter Fauth, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,801

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753627

Int. Cl.[2] G03B *1/00, 17/50*

U.S. Cl. 354—86 **5 Claims**

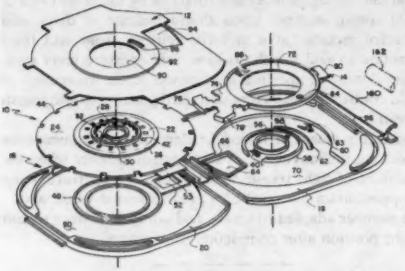


1. In a camera, particularly in an instant picture camera, a combination comprising a pair of nip rollers; a film transporting member for moving film into the nip of said rollers; gear means, including at least one gear coupled with one of said rollers for joint rotation therewith; an internally toothed belt trained about said gear means in motiontransmitting relationship therewith; camera-mounted functioncontrolling elements; input means operatively connected with said belt for advancing the same in a predetermined direction and thereby turning said gear means; a slide mounted for movement in and opposite to said direction, said input means including a handle coupled to said slide and accessible to a user for effecting the movement of said slide; and operating means on said belt for operating at least some of said function controlling elements during advancement of the belt, including at least one projection engageable by said slide during movement thereof in said direction.

4,194,822
PHOTOGRAPHIC FILM CARTRIDGE ASSEMBLY AND CAMERA

Gurdip S. Sethi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,053
Int. Cl.[2] G03B *17/32, 19/10*
U.S. Cl. 354—121 30 Claims



1. In a photographic cartridge assembly of the type having (1) an opaque casing, a wall of which has an exposure window and (2) a film unit, with a photographic film disk having an exposure region, mounted in the casing for rotational movement relative to the casing such that different image areas on the exposure region are moved successively into alignment with the exposure window; the improvement comprising:

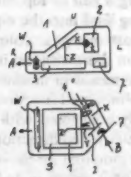
a cover member including an opaque region, said cover member being mounted in the casing between the wall and the film disk for movement, independent of the film unit, between a closing position in which said opaque region is aligned with and closes the exposure window, and an opening position in which said opaque region is out of alignment with and opens the exposure window; and

means operatively interconnecting said film unit and said cover member for imparting rotational movement to the film unit during and as a result of at least a portion of the movement of said cover member to bring successive image areas into alignment with the exposure window.

4,194,823
ARRANGEMENT OF A PHOTOGRAPHIC CAMERA HAVING TWO DEVIATING MIRRORS

Günter Fauth, Unterhaching, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 885,073
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710439
Int. Cl.[2] G03B *17/50, 15/00, 13/08*
U.S. Cl. 354—150 1 Claim

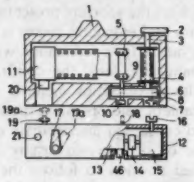


1. A photographic camera having a camera body; an objective in one wall of the camera body; and means for supporting a rectangular film strip disposed inside the camera body, comprising a first light deviating member arranged inside said camera body at an inclined position above the film strip, and a second light deviating member arranged at an inclined position behind said objective for reflecting light rays from said objective to said first deviating member, the mutual relative positions of said first and second deviating members and said objective being adjusted for directing at least one section of the optical axis of the polygonal path of travel of light rays in the camera at an oblique angle relative to the edges of said film strip; and the reflecting surfaces of said first and second deviating members extending parallel to each other.

4,194,824
CAMERA EQUIPPED WITH AUTOMATIC UNWINDING DEVICE

Akihiro Arai, Urawa, and Eiji Yamamori, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,239
Claims priority, application Japan, Jun. 24, 1977, 52/83263
Int. Cl.[2] G03B *1/18, 19/12*
U.S. Cl. 354—173 3 Claims



1. In a camera equipped with an automatic unwinding device and capable of multiple exposure operation, said camera having a film transport mechanism which is disabled by a means for disabling during both automatic unwinding and multiple exposure operations, the improvement characterized in that said disabling means comprises:

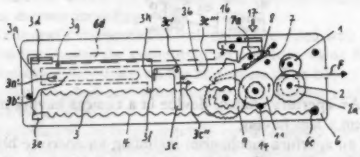
independently operable multiple exposure operating means for disengaging said film transport mechanism during multiple exposure photography; and

automatic unwinding operating means for both engaging said automatic unwinding device and operating said multiple exposure operating means to implement automatic unwinding.

4,194,825
PHOTOGRAPHIC CAMERA

Günter Fauth, Unterhaching, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,577
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1976, 2653247
Int. Cl.[2] G03B *1/00, 17/52*
U.S. Cl. 354—212 8 Claims



1. In a photographic camera, particularly in an instant-picture camera, a combination comprising a housing; transporting means, including a plurality of transporting elements for transporting a film; manually operable actuating means extending in part from said housing and mounted for movement relative to

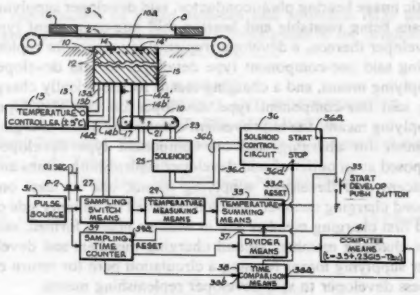
said housing from a starting position to an operating position to thereby operate said transporting means, and back to said starting position, said actuating means comprising an actuating portion which is engageable by the fingers of a user, a rack composed of at least two rack sections which are shiftable lengthwise of each other during said movement, and gear means driven by said rack and drivingly connected with said transporting means; and energy storing spring means connected to at least one of said rack sections and to a stationary part of the camera and operative for storing energy during said movement to the starting position, and to dissipate the stored energy during and thereby aid in the subsequent movement to the operating position.

4,194,826

SYSTEM FOR DEVELOPING HEAT RESPONSIVE FILM

Gary D. Lewis, St. Clairs Shores, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 5, 1978, Ser. No. 939,367
Int. Cl.² G03D *13/00*
U.S. Cl. 354—299 **4 Claims**



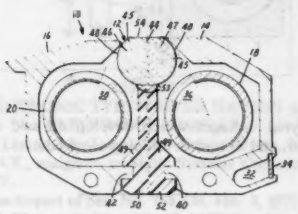
1. In a film developing system for developing a heat responsive film where the desired time of exposure of the film to a heat source is defined by a given formula which is a function of an assumed constant temperature applied to the film, said system including a source of heat to be applied to the film, and heat source applying means for applying said heat source to said film for a limited developing period, the improvement in control means for controlling the time said heat source is applied to said film, said control means comprising: sampling means for repeatedly sampling the temperature of said heat source when it is applied to said film beginning with the time the heat source is applied thereto, average temperature measuring means responsive to said sampling means for providing a measurement of the running average temperature of said heat source during the temperature sampling times over a progressively varying period beginning with the time said heat source is applied to the film, computing means for computing the theoretically desirable exposure time from said given formula where the temperature value used in the calculation is a function of the running average temperature measured by said average temperature measuring means, time measuring means for providing a measure of the time duration between the beginning of said period when said heat source is applied to said film and the particular instant of time involved, time comparison means responsive to the time measured by said time measuring means and the time computed from said given formula by said computing means, and means responsive to said time comparison means for removing said heat source from said film when said time measurement of said time measuring means and computing means reach a given degree of correspondence.

4,194,827

FIBER OPTICAL ELEMENT IMAGING AND ILLUMINATION ASSEMBLY

Lyle A. Bleeker, Saint Paul, and Richard Owen, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 28, 1978, Ser. No. 937,463
Int. Cl.² G03B *27/00*
U.S. Cl. 355—1 **17 Claims**



1. A unitary optical element adapted for use in a photocopy machine for directing light onto a graphic original and for conveying light reflected therefrom onto a light sensitive receptor surface, said element comprising

(a) a substantially linear array of mutually parallel coherent optical fibers,

(b) a transparent light collection member having a first surface extending the length thereof for collecting light directed thereat, said member being positioned transversely to said fibers and integrally bonded in an optically coupled relationship thereto such that a first end of the fibers terminates coplanar with a top surface of said member, wherein said collected light is transmitted therethrough and thence through said fiber array to illuminate a narrow band adjacent the first end of said fibers, and

(c) elongate support means within which said fiber array is integrally bonded and to which said collection member is integrally bonded, including a base section having a lower surface at which the other end of said fiber array terminates, whereby light thus directed illuminates successive lines of said original when caused to be traversed thereby and an image of said successive lines is formed on said receptor surface by reflected light conveyed through said fiber array when it is caused to be traversed thereby.

4,194,828

PROCESS AND APPARATUS FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE

Rudolf Hölz, Schlangenbad, and Helmuth Haberhauer, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,814
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1976, 2655158
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 DD **27 Claims**

13. An apparatus for developing an electrostatic latent charge image which comprises:

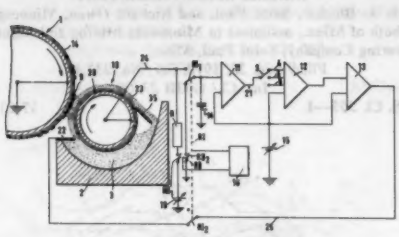
(a) a developing electrode connected to a voltage source for applying a voltage to said electrode;

(b) means for receiving a developer mixture;

(c) an element supporting a recording material; and

(d) a capacitive member connected to a fixed reference

voltage source, said capacitive member being arranged so that it is alternatively connected to an amplifier circuit, for



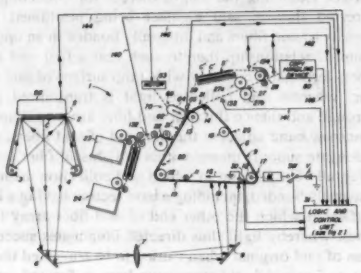
amplifying voltages which develop on said capacitive member, and to said developing electrode.

4,194,829

APPARATUS FOR PRODUCING DUPLEX COPIES

William A. Cavagnaro, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,566
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 TR **11 Claims**



1. In apparatus for producing duplex copies, and including an image transfer member movable at a first velocity and having first and second unfixed transferable images and image transfer means for transferring the transferable images from the image transfer member to first and second sides respectively of a copy sheet, the improvement comprising:

copy sheet turnover means located adjacent to the image transfer member for turning over the copy sheet, said turnover means being movable in a first direction to separate from said transfer member a copy sheet to which said first transferable image has been transferred to a first side thereof and in a second direction after separation of the copy sheet from the image transfer member to turn over said copy sheet while said first image is unfixed and to register the second side of the copy sheet with the second transferable image on said image transfer member at the image transfer means; and

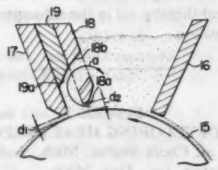
means for moving said turnover means at a velocity equal to said first velocity both in said first direction during separation of said copy sheet from said transfer member and in said second direction during registration of said copy sheet with said transfer member and at a velocity greater than said first velocity in either said first or second directions after said copy sheet is separated from but before it is brought back into registration with said transfer member.

4,194,830

DEVELOPMENT APPARATUS

Teruyuki Ohnuma, Yokohama; Kaoru Shimizu, Tokyo; Selichi Miyakawa, Nagareyama, and Hajime Oyama, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 26, 1978, Ser. No. 946,384
Claims priority, application Japan, Sep. 30, 1977, 52-118174
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 DD **9 Claims**



1. In a development apparatus for developing a latent electrostatic image comprising a developer supplying means for supplying a one-component type developer to a latent electrostatic image bearing photoconductor, said developer supplying means being rotatable and bearing said one-component type developer thereon, a developer replenishing means for replenishing said one-component type developer to said developer supplying means, and a charging means for electrically charging said one-component type developer on said developer supplying means, the improvement comprising a first charging member for charging said one-component type developer, disposed at an outlet of said developer replenishing means and adjacent said developer supplying means, and at least one second charging member, which is disposed on an inner side of said first charging member and in which a hole is formed, said first charging member, second charging member, and developer supplying means forming a circulation path for return of excess developer to said developer replenishing means.

4,194,831

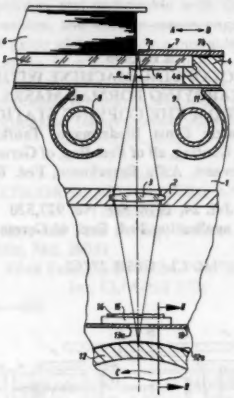
OPTICAL COPIER

Karl Hartwig, Unterhaching, Fed. Rep. of Germany, and Gottfried Waibel, Rossleithen, Austria, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 969,480
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757850
Int. Cl.² G03G *15/00*; G03B *27/54*
U.S. Cl. 355—3 R **11 Claims**

1. In an optical copier, a combination comprising a transparent support for an original to be copied; an abutment edge in part delimiting an image area and against which the original should be, but sometimes is not abutted; optical means for scanning the original on said support to produce an image of the original for copying purposes; and an at least semi-transpar-

ent light-diffusing strip portion outside the focal plane of said optical means and adjacent said abutment edge, for preventing



the reproduction of a gap between said abutment edge and original as a dark area on a copy being made of the original.

4,194,832

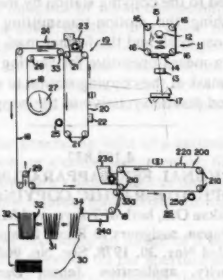
CONSECUTIVE COPYING AND BOOKBINDING METHOD AND ITS APPARATUS

Seiichi Tabayashi, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1977, Ser. No. 865,784

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—11 **13 Claims**



1. A consecutive copying and book-binding method for manufacturing a book from a web and wherein individual pages of the complete book are imaged on individual frames of a microfilm, comprising the steps of:

(a) projecting an image of a frame of the microfilm on an endless electrophotographic plate, developing the latent image, transferring the image electrostatically to an obverse surface of the web at one location on the web, and fixing the image on the obverse surface of the web;

(b) projecting another image in the next frame of the microfilm on another endless electrophotographic plate, developing the latent image, transferring the other image electrostatically to a reverse surface of the web at a location displaced along the length of the web by a distance which is an integer multiple of the width of one page, and fixing the image on the reverse surface of the web;

(c) successively folding the web with the fixed images at intervals of one page after repeating steps (a) and (b) while advancing the web; and

(d) cutting the final page of the book and binding the folded web.

4,194,833

ELECTRONIC TYPEWRITER HAVING AN ELECTRONIC DISPLAY

Robert W. Lester, Manhasset, and Robert Hotto, New York, both of N.Y., assignors to Static Systems Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 765,339, Feb. 3, 1977, Pat. No. 4,110,794. This application May 9, 1977, Ser. No. 794,787

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—14 CU **3 Claims**

1. A word processing system for displaying and reproducing alphanumeric characters on a photocopy machine capable of scanning an original document, comprising:

a housing including an electronic keyboard with keys representing individual alphanumeric characters, said housing including a display for viewing a portion of the information keyed;

a memory circuit coupled to said keyboard for storing and spacing the alphanumeric indicia in memory;

a microprocessor circuit, having an algorythm circuit and coupled to said memory circuit for converting the stored alphanumeric indicia from the memory to a line of dots by comparison with the algorythm; and

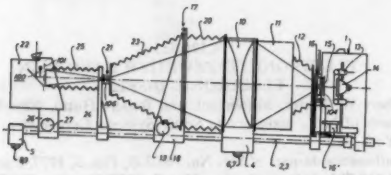
at least one elongated, solid state reflective display strip, having a single line of reflective dots defining its display screen, and disposed transversely to the scanning direction of the photocopy machine, said strip being coupled to the microprocessor, said microprocessor addressing the proper column of dots in a row to produce the top portion of a complete line of alphanumeric characters on said screen, addressing the same column of dots in the next sequential row, so that the top portion of the characters are shifted one space up to display the adjacent lower portion of the character line on said screen, so that after a plurality of addressing cycles, the stored alphanumeric indicia are converted to a line of dots and reproduced on said screen, and are scrolled synchronously in the same direction and at the same speed as the scanning speed of the photocopy machine.

4,194,834

UNIT FOR REPRODUCING TRANSPARENT ORIGINALS, OR THE LIKE

Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein

Division of Ser. No. 746,301, Dec. 1, 1976, Pat. No. 4,110,036.
This application Jun. 29, 1978, Ser. No. 920,399
Claims priority, application Switzerland, Dec. 2, 1975, 15625/75
Int. Cl.[2] G03B 27/54
U.S. Cl. 355—67 10 Claims



1. A unit for reproducing transparent originals, or the like, comprising:

a light generator for producing a beam of light; said light generator comprising a light source;

a camera having a film plane; a condenser for directing light to the film plane of said camera;

a carrier for supporting an original in the beam of light from said light source;

said light source being shaped in the annular form, with said annular source having an axis directed toward said camera objective and said light source directing light from said light generator toward the film plane in said camera;

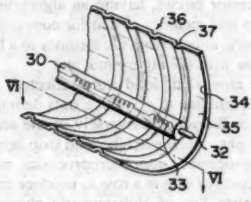
said light source being movably mounted in said unit for enabling shifting of said light source toward and away from said objective, for permitting compensating of the loss of luminosity at the edges of the image due to vignetting of the camera objective and for obtaining also uniform light intensity on the film plane in the camera.

4,194,835

EXPOSURE DEVICE

Tsuyoshi Shiode, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 21, 1978, Ser. No. 944,549
Claims priority, application Japan, Sep. 27, 1977, 52-129767[U]
Int. Cl.[2] G03G 15/00; G03B 27/54
U.S. Cl. 355—67 9 Claims



1. An exposure device for exposing an original to a belt-like flow of beams of light comprising:

a mirror having a reflecting surface formed in an elliptical plane having a first line focus on a first line and a second line focus;

a light source for exposing said original at said second line focus including a lamp having a number of light spot sources spaced along said longitudinal axis so as to direct light at said reflecting surface; and

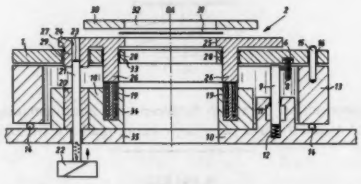
means for diffusedly reflecting said light from said reflecting surface in a direction defined by said first line, said means including rugged portions formed in said reflecting surface.

4,194,836

PHOTOGRAPHIC COPYING MACHINE WITH CARRIER STRUCTURE CARRYING FORMAT MASKS TO AND AWAY FROM THE COPYING STATION

Heinz Rapp, Munich; Ernst Biedermann, Taufkirchen, and Siegfried Bartel, Gauting, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,520
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734324
Int. Cl.[2] G03B 27/62
U.S. Cl. 355—75 12 Claims



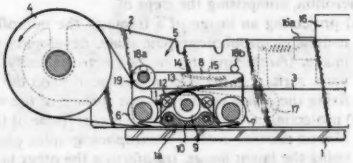
1. In a photographic copying apparatus having a copying station, in combination, a format-mask carrier structure provided and normally in motion-transmitting engagement with a format mask; mounting means mounting the format-mask carrier structure for movement along a predetermined path for transporting the format mask to and then away from the copying station; decoupling means operative when the format mask has been carried to the copying station by the carrier structure for disestablishing the motion-transmitting engagement between the format mask and the format-mask carrier structure; and positioning means operative for causing the thusly disengaged format mask at the copying station to assume and retain a predetermined position relative to the copying station.

4,194,837

ORIGINAL FEED APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Tatsuo Tani; Sakae Ota, both of Tokyo, and Masao Kono, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Nov. 30, 1978, Ser. No. 964,876
Claims priority, application Japan, Dec. 2, 1977, 52-161984[U]
Int. Cl.[2] G03B 27/62; B65H 5/22
U.S. Cl. 355—75 9 Claims



1. A device for feeding an original past an irradiation position over a transparent member of an electrophotographic copying machine which is capable of operating with a sheet mode copying operation and with a book mode copying operation, comprising an endless belt conveyor having a reach movable over the transparent member, deflection means at the location of the irradiation position effective to move said belt

away from said transparent member at the irradiation position and return it to said member at the end of the irradiation position, a guide plate overlying the transparent member at the irradiation position and engageable with the original at the irradiation position, and control means engageable with said belt and said guide plate and being movable to a sheet mode operation position in which said belt is pressed against the original at the irradiation position and being also movable to a book mode operation position in which said belt is not pressed against the original at the irradiation position.

4,194,838

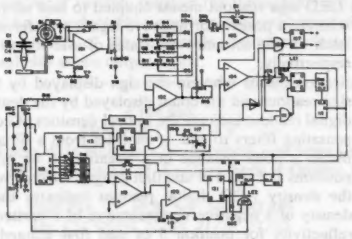
DIGITAL COLOR DENSITOMETER AND EXPOSURE METER

Michael P. Bey, and Paul P. Bey, both of 4909 Abbott Dr., Temple Hills, Md. 20031

Filed Feb. 22, 1977, Ser. No. 764,894

Int. Cl.[2] G01J *3/50*

U.S. Cl. 356—404 **14 Claims**



1. A photometric device for determining by analog to digital means the optical densities of color compensating filters required to obtain a color balance of a color negative to be printed and the exposure time, including compensation for the reciprocity effect of a particular photographic paper by an associated density measurement of said color negative, said density representative of a particular print reflectivity comprising:

a light source for generating light of a paticular intensity;

means for supporting a color compensating filter pack;

means for supporting a color negative, illuminated by light from said light source transmitted through said color compensating filter pack;

optical means for providing an image of a selected area of said illuminated negative on the aperture of a probe;

adjustable aperture means controlling the intensity of said image;

optical coupling means to direct said light from said image through selectable primary color filters or a neutral density filter;

photodetector means collecting light from said image directed through said selected filters providing a current proportional to the intensity of the selected spectral component of said collected light;

a first linear amplifier means coupled to said detector means producing a voltage proportional to said detector current;

variable feedback resistive means coupled to said first amplifier means, wherein the gain of said first amplifier means is adjustable by said variable feedback means;

selector switch means wherein the output terminal of said first amplifier means is coupled to position **1** of a first selector switch and wherein said first selector switch is coupled to a voltage source in position **2**;

memory standard means comprising a second linear amplifier means coupled to the pole of said first selector switch and wherein said second amplifier means is coupled to selective feedback resistive means which control the gain of said second amplifier means;

a first ganged selector switch means mechanically coupled to said selected primary color and neutral density filters and wherein the red said primary color filter is selected in position **2** and the remaining primary color filters are selected in positions **3** and **4** and said neutral density filter is selected in position **5**;

a selector switch means comprising the first section of said first ganged switch means wherein the pole of said first section is coupled to said second linear amplifier means and to said feedback resistive means of said second amplifier means and wherein position **2** of said first switch section is coupled to a fixed said feedback resistive means and coupled to independently variable said feedback resistive means in in positions **3**, **4**, and **5** of said first switch section;

a selector switch means comprising the second section of said first ganged switch means wherein positions **2**, **3**, and **4** of said second switch section are coupled to one terminal of a variable resistive means and position **5** is coupled to one terminal of a fixed resistive means;

coupling means wherein the output terminal of said second amplifier means is coupled to the remaining terminals of said fixed and variable resistive means;

a gate-controlled switch means coupled to the pole of said second section of said first ganged switch means;

a signal integrator means wherein the input terminal of said signal integrator is coupled to said gate-controlled switch means;

a second gate-controlled switch means shunting the capacitor coupled to said signal integrator;

selector switch means comprising the third switch section of said first ganged switch means, wherein the pole of said third switch section is coupled to a fixed voltage source in positions **2**, **3**, and **4** and to a variable exposure voltage source in position **5** of said third switch section;

switching means comprising the fourth section of said first ganged switch means wherein the pole of said fourth switch section is coupled to ground in positions **2**, **3** and **4** and to the pole of a second ganged switch means in position **5** and wherein the pole of said first section of said second ganged switch means is coupled to a fixed voltage source in position **1** and to ground in position **2** of said first switch section of said second ganged switch means;

a gate-controlled clock means provided with an enable input terminal;

an AND gate means wherein the output terminal of said AND gate is coupled to the enable terminal of said clock;

a first enabling means wherein the pole of said fourth section of said first ganged switch means is coupled to one input terminal of said AND gate;

set-reset means comprising a reset pulse generator wherein said reset pulse generator produces a reset voltage pulse periodically;

binary counter means wherein the reset means of said binary counter is coupled to said reset pulse generator and clock input means of said binary counter is coupled to said clock;

parallel resistive means each in series with a gate-controlled switch coupled to a fixed voltage source;

binary gating means coupled to said binary counter wherein the binary terminals of said binary counter are coupled to said gate-controlled switches in series with each of said parallel resistive means, opening said switches sequentially when said binary counter is clocked;

a second integrator means coupled to said parallel resistive means;

capacitor means coupled to said second integrator means wherein said capacitor is shunted by a gate-controlled switch;

a first voltage comparator means wherein one input terminal of said voltage comparator is coupled to the output terminal of said second integrator and the remaining input

terminal of said voltage comparator is coupled to the pole of said third section of said first ganged switch means;

a gating means comprising a first set-reset flip-flop wherein the input reset terminal of said flip-flop is coupled to the output terminal of said first voltage comparator and wherein the set input terminal of said flip-flop is coupled to said reset pulse generator;

switching means comprising the second switch section of said second ganged switch means wherein position 1 of said second section is coupled to ground and position 2 is coupled to the reset output terminal of said first set-reset flip-flop;

switching means comprising the fifth switch section of said first ganged switch means wherein positions 2, 3 and 4 of said fifth switch section are coupled to the reset output terminal of said first set-reset flip-flop and position 5 of said fifth section is coupled to the pole of said second switch section of said second ganged switch means;

gating means comprising said first set-reset flip-flop wherein the set output terminal of said flip-flop is coupled to said switch coupled to the input terminal of said signal integrator, to said switch shunting said second integrator and to the remaining input terminal of said AND gate;

a decimal counter means wherein the clock input of said decimal counter is coupled to said clock and the reset terminal of said decimal counter is coupled to said reset pulse generator;

a latch means coupled to said decimal counter and enabled by the reset output voltage of said first set-reset flip-flop;

an exposure LED digital readout coupled to said latch means wherein the count of said decimal counter is transferred to said readout by said latch;

a gating means comprising a second set-reset flip-flop wherein the set input terminal of said second flip-flop is coupled to said reset pulse generator and the reset input terminal of said flip-flop is coupled to the output terminal of a NOR gate and wherein the set output terminal of said second flip-flop is coupled to said switch shunting said signal integrator capacitor and to one input of a second AND gate;

a second gate-controlled clock means provided with an enable input means;

a gating means wherein the remaining input terminal of said second AND gate is coupled to the pole of said fifth switch section of said first ganged switch and wherein the output terminal of said AND gate is coupled to a gate-controlled switch, which is coupled to a fixed voltage source and to a capacitor means shunted by a resistive means to ground;

a calibration means wherein the time constant for the discharge of said capacitor means through said resistive means is equal to 230 in units of said second clock period;

a voltage pulse generator means wherein said voltage pulse generator is gated on by said reset voltage pulse and generates a voltage pulse of duration equal to $100 \cdot \text{Log}_{10}(Vo/V2)$, wherein Vo is the voltage to which said capacitor means charges, V2 determines the range of measurement and said duration is expressed in units of the period of said second clock;

a second voltage comparator means, wherein the input terminals of said voltage comparator are coupled to said capacitor means and to the output terminal of said signal integrator;

a gating means comprising a NAND gate, the input terminals of which are coupled to said voltage pulse generator and to the output terminal of said second voltage comparator;

an inverter means wherein the input terminal of said inverter is coupled to said pulse generator means;

a gating means comprising a third AND gate, the input terminals of which are coupled to the output terminals of said inverter and said second voltage comparator;

a gating means comprising said NOR gate, the input terminals of which are coupled to the output terminals of said voltage pulse generator and said second voltage comparator;

gating means comprising a third set-reset flip-flop wherein the reset input terminal of said third flip-flop is coupled to the output terminal of said NOR gate, the set input terminal is coupled to the output terminal of said NAND gate and the set output terminal of said third flip-flop is coupled to the enable input of said second clock;

a second decimal counter means coupled to said reset pulse generator and to the output terminal of said second clock;

a latch means coupled to said second decimal counter, wherein the enable input terminal of said latch means is coupled to the output terminal of said NOR gate;

a density LED digital readout means coupled to said latch means;

a gating means comprising a fourth set-reset flip-flop wherein the set input terminal of said fourth flip-flop is coupled to said reset pulse generator and the reset input terminal is coupled to the output terminal of said third AND gate;

a set-reset latch means coupled to the set and reset output terminals of said fourth flip-flop;

an LED sign readout means coupled to said set-reset latch wherein a positive or negative sign is transferred by said latch for the set and reset states of said fourth flip-flop, respectively;

indication means wherein the sign displayed by the LED sign readout and the count displayed by the density LED digital readout indicate the optical densities of color compensating filters to add or subtract from a filter pack to obtain a color balance of a negative to be printed for positions 2, 3 and 4 of said first ganged selector switch and the density LED digital readout indicates the optical density of a negative representative of a particular print reflectivity for position 5 of said first ganged selector switch and position 2 of said second ganged selector switch and wherein the count displayed by the first LED digital readout indicates the exposure time, including reciprocity compensation, for said first ganged selector switch in position 5 and said second ganged selector switch in position 1 resulting in said print reflectivity.

4,194,839

CIRCUIT ARRANGEMENT FOR RECOGNIZING AND ADJUSTING COLOR COMPONENTS

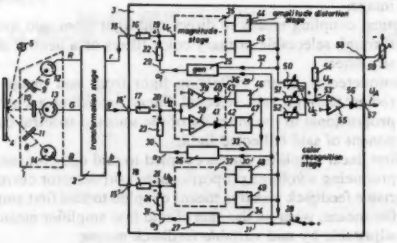
Hans G. Knop, Heikendorf, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Jun. 17, 1977, Ser. No. 807,507

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628053

Int. Cl.[2] G01J 3/50

U.S. Cl. 356—407 **12 Claims**



1. A color selection circuit arrangement for recognizing colors, particularly a color pattern, with a device scanning the color pattern in order to produce a number of primary signals for each scanning location, including devices for producing a corresponding number of comparative signals adjustable in dependency of a color to be recognized, a corresponding

number of subtraction stages for producing differential signals from a plurality of primary color signals and the respectively corresponding comparative signals and respectively receiving inputs from said scanning device and said comparative signal devices, a linkage circuit for the differential signals for producing an output signal characterizing the deviation of the respectively scanned color from the color to be recognized, a compensation stage for subtracting the output signal of the linkage circuit from an adjustable inverted polarity voltage, and with a circuit for suppressing the output signal of the compensation stage when the output signal of the linkage circuit is larger than a counter voltage, comprising;

(a) at each subtraction stage (19, 20, 21) a respective magnitude stage (35, 36, 37) with a first output (42) indicating signals derived from positive output signals of the subtraction stages (19, 20, 21) and with a second output (43) indicating signals derived from negative output signals of the subtraction stages (19, 20, 21),

(b) the first and the secnd outputs (42 or 43) of each magnitude stage (35, 36, 37) is respectively connected with an adjustable amplitude distortion stage (44 through 49), and

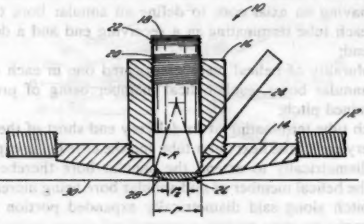
(c) a plurality of variable resistors (50 through 53) are provided for the selectable weighting and combining of the output signals of the amplitude distortion stages (44 through 49) as the output signal.

4,194,840

SENSOR CONTACT

John M. Lucas, 4816 Hutchison St., Montreal, and Serge Gracovetsky, 209 du Dauphine, St. Lambert, both of Quebec, Canada

Filed Feb. 27, 1978, Ser. No. 881,855
Int. Cl.² G01N *21/48, 21/18, 21/30*
U.S. Cl. 356—429 **6 Claims**



1. In a sensor means, a sensor element having a face adapted to contact the surface of the travelling paper web, said face being a convex surface that is substantially in the form of a single base segment of the sphere having a radius of between 10 and 35 mm, said face contacting said surface of said web over an instantaneous area of contact having its dimension in the direction of travel of the paper of between 2 mm and 8 mm.

4,194,841

METHOD AND APPARATUS FOR PROCESSING POLYMERIC MATERIALS

Zehev Tadmor, Dept. of Chemical Engineering, Stevens Institute of Technology, Hoboken, N.J. 07030

Division of Ser. No. 795,211, May 11, 1977, Pat. No. 4,142,805, which is a continuation-in-part of Ser. No. 654,040, Feb. 2, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,178
Int. Cl.² B01F *5/12, 7/10*
U.S. Cl. 366—75 **18 Claims**

1. A machine for processing solid and viscous plastic and polymeric materials comprising:

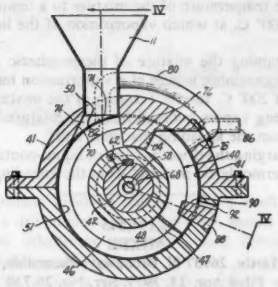
A. a rotatable element carrying an annular channel providing a polymer processing surface area which includes opposied side walls;

B. a stationary element providing a coaxial surface forming with said channel an enclosed annular processing passage;

C. means including an inlet opening to feed polymeric or plastic material to said passage to form a body of material substantially filling said passage;

D. means for causing relative rotation between said channel and said surface about their common axis to move said side walls in a circumferential direction from the inlet opening of said passage;

E. an outlet opening from said passage circumferentially disposed a major portion of a complete revolution from said inlet opening in the direction of rotation of said channel; and



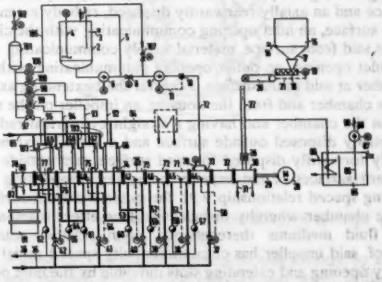
F. a blocking member comprising a material collecting end wall and scraper portions disposed in said passage between said outlet opening and said inlet opening in the direction of rotation of said channel, said end wall being constructed to hold said body of material in said channel so that there is relative movement between said polymer processing surface area and said body of material in the channel whereby said polymer processing surface area drags forward material in contact with said polymer processing surface area to said material collecting end wall surface for processing and discharge.

4,194,842

METHOD FOR BINDING LIQUID-CONTAINING RADIOACTIVE WASTES AND KNEADING MACHINE THEREFOR

Anwer Puthawala, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulhiem, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,476
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631326
Int. Cl.² B29H *9/00*; B28C *7/02, 7/06*
U.S. Cl. 366—76 **7 Claims**



1. In a method for binding liquid-containing radioactive

wastes by kneading the wastes in admixture with a thermoplastic material in a kneading machine, the improvement which comprises

(a) introducing the thermoplastic material in particle form and at a temperature at which the particles will not stick together, into the kneading machine,

(b) heating the thermoplastic material in the kneading machine in the absence of said liquid-containing wastes to a temperature of at least 100° C. and below 200° C.,

(c) introducing all the liquid-containing wastes into the kneading machine at a point where the thus heated thermoplastic material is at a temperature below 200° C.,

(d) mixing the thermoplastic material and liquid-containing wastes in the kneading machine and concurrently increasing the temperature of the mixture to a temperature of at least 200° C. at which vaporization of the liquid will occur,

(e) maintaining the mixture of thermoplastic material and liquid-containing wastes at a vaporization temperature of at least 200° C. to effect drying of the mixture,

(f) releasing vapors evolved from the mixture by vaporization from the kneading machine, and

(g) discharging the dried mixture of liquid-containing wastes and thermoplastic material from the kneading machine.

4,194,843

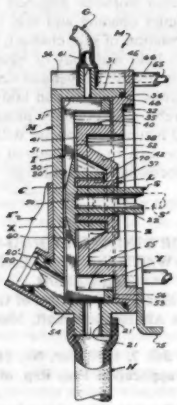
MIXER

Ernest N. Martin, 26937 N. Broadway, Escondido, Calif. 92026

Filed Apr. 13, 1979, Ser. No. 29,730

Int. Cl.[2] B01F *15/02, 7/12*

U.S. Cl. 366—138 **8 Claims**



1. A beverage mixer comprising a housing with a chamber having a straight, cylindrical radially inwardly disposed outer surface and an axially rearwardly disposed, radially extending front surface, an inlet opening communicating with the chamber at said front surface, material supply communicating with the inlet opening, an outlet opening communicating with the chamber at said outer surface, a central shaft extending axially in the chamber and from the housing, an impeller on the shaft within the chamber and having a straight cylindrical radially outwardly disposed outside surface and a radially extending axially forwardly disposed forward surface, said outside and forward surfaces of the impeller occurring in opposing free running spaced relationship with the outer and front surfaces of the chamber whereby turbulent surface effect is imparted into fluid mediums therebetween upon relative rotation thereof, said impeller has circumferentially spaced radial and axially opening and extending slots movable by the inlet opening when the impeller is rotated to receive fluid material introduced into the chamber through that opening, to transport and distribute said material circumferentially, to centrifugally cast said material radially outwardly between said outer and front opposing surfaces and to centrifugally cast material advanced radially and circumferentially in the chamber to and out through said outlet opening.

4,194,844

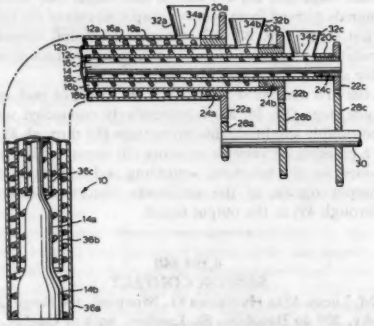
MULTIPLE POWDER CONVEYOR SYSTEM

Jorg-Hein Walling, St. Hubert, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 13, 1978, Ser. No. 876,874

Int. Cl.[2] B01F *15/02, 15/04*

U.S. Cl. 366—157 **5 Claims**



1. Apparatus for receiving and conveying a plurality of different powders simultaneously and delivering said powders continuously as a blended powder mix, comprising:

a plurality of concentric tubes spaced one from another to define annular bores therebetween, the innermost tube having an axial core to define an annular bore therein, each tube terminating in a receiving end and a delivery end;

a plurality of helical members located one in each of said annular bores, each helical member being of predetermined pitch;

each tube terminating at its delivery end short of the delivery end of the next outer tube and the core being expanded diametrically to extend the annular bore therebetween, the helical member of said annular bore being increased in pitch along said diametrically expanded portion of the core;

each tube having means adjacent the receiving end thereof to pass powder to the helical member in the annular bore therein; and

means to rotate each helical member axially.

4,194,845

METHOD AND APPARATUS FOR MIXING LOOSE MATERIAL

Wolfgang Krambrock, Vogt, and Paul Lübbehusen, Ravensburg, both of Fed. Rep. of Germany, assignors to Waeschle Maschinenfabrik GmbH, Ravensburg, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,712

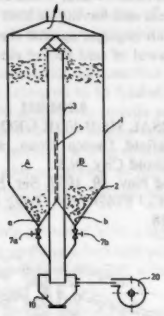
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742904

Int. Cl.[2] B01F *15/02, 13/02, 5/12*

U.S. Cl. 366—159 **19 Claims**

1. An apparatus for mixing loose material, comprising an elongated container adapted to be fed with material to be mixed and having an upper portion receiving the material and a lower portion, the material descending from said upper portion to said lower portion; outlet means on said lower portion of said container for withdrawing the material from the latter; means for returning the thusly withdrawn material back into the container for further mixing, and including a rise pipe

mounted in said container and having a lower open end receiving the material from said outlet means and an upper open end



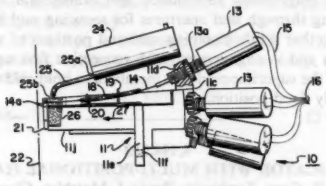
discharging the material into the interior of the container; and means for tilting said riser pipe relative to the vertical for varying the rate of descent of the material in said container.

4,194,846

DOT MATRIX PRINTING DEVICE EMPLOYING A NOVEL IMAGE TRANSFER TECHNIQUE TO PRINT ON SINGLE OR MULTIPLE PLY PRINT RECEIVING MATERIALS

Samuel D. Zerillo, Nashua, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Apr. 28, 1978, Ser. No. 901,182
Int. Cl.[2] B41J *3/12, 27/04*
U.S. Cl. 400—124 **18 Claims**



1. Printing means for forming a pattern upon an ink receiving medium comprising:

a housing having a hollow interior, said housing having forward and rearward ends;

a reciprocally mounted elongated printing member positioned within said housing and having a forward end with a printing tip;

driving means mounted along said rearward end for normally maintaining said printing member in a first position with said printing tip displaced from said ink receiving medium and for urging said printing tip toward said ink receiving medium when activated;

guiding means provided in the forward end of said housing for guiding the forward end of said elongated printing member to freely enable said reciprocating action, said guiding means having a bore, said bore having a contour conforming to the cross-sectional configuration of the printing member which passes through said bore;

ink supply means; and

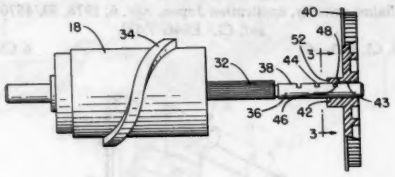
means comprising a wicking material communicating with said ink supply means and wipingly engaging the peripheral surface of said printing member for delivering ink from said ink supply means to said printing member whereby ink is transferred to a portion of the peripheral surface of the printing member slidably movable into said bore and is delivered to said printing tip for transfer to the print receiving medium when said driving means is actuated.

4,194,847

LOCATING AND MAINTAINING A HUB MEMBER ON A SHAFT

Michael O. Grey, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed May 1, 1978, Ser. No. 901,921
Int. Cl.[2] B41J *23/02*; F16B *21/07*; F16D *1/08*
U.S. Cl. 400—320 **7 Claims**



1. In a business machine having a drive shaft, a driving element and a driven element on said shaft, means for radially orienting and selectively positioning said driving element along said shaft comprising a

shaft portion having a reduced radius surface on an arc of said shaft to provide a shaped portion, a

hub member integral with said driving element and extending along said shaft portion in like shaped form, a

hub member portion separated from said hub member along the length of the hub member portion on either side thereof for a distance along said shaft portion and normally biased for engagement with said shaft portion, a

plurality of transverse slots in the surface of said shaft portion, and a

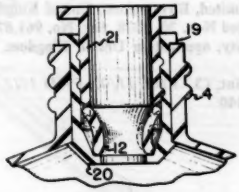
lip portion on said hub member portion for automatic engagement with a selected one of said slots when aligned therewith.

4,194,848

ADJUSTABLE COSMETIC WIPER

Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Filed Dec. 5, 1977, Ser. No. 857,074
Int. Cl.[2] A46B *11/04*
U.S. Cl. 401—5 **31 Claims**



1. A cosmetic package comprising:

a. a container having a cosmetic composition therein;

b. a container closure;

c. a wiper having an orifice means adapted to wipe excess cosmetic from the applicator;

d. a cosmetic applicator attached to said closure by a shaft and adapted to be passed through said wiper orifice and immersed in said cosmetic composition when said closure is attached to said container;

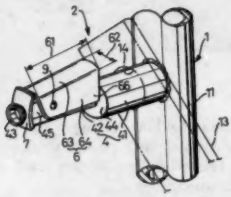
e. adjusting means to vary the cross sectional area of said orifice;
f. indicating means comprising a plurality of indicia, each indicia corresponding to a different orifice cross-sectional area; and
g. means to position said indicia to correspond to the selected orifice cross-sectional area.

4,194,849

DEVICE FOR RETAINING SCAFFOLD MEMBER

Norio Matsuura, 10-16 Minoo 6-chome, Minoo City, Osaka 562, Japan

Filed Aug. 11, 1978, Ser. No. 932,797
Claims priority, application Japan, Apr. 6, 1978, 53/45701[U]
Int. Cl.[2] E04G 7/00
U.S. Cl. 403—49 6 Claims



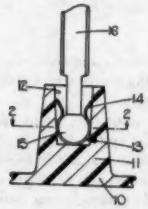
1. A device for retaining a scaffold member comprising:
a main body including a rod portion and a mounting pin extending from the forward end of the rod portion having a smaller diameter than the rod portion and having parallel flat walls on opposite sides of the mounting pin;
a retractable pivotable member fitting over and covering the mounting pin, the pivotable member including a semicircular curved portion having approximately the same length as the mounting pin, a pair of parallel side plates extending from the opposite sides of the curved portion with the pin interposed between the side plates, and a forward portion of said pivotable member being secured to the mounting pin loosely and pivotably;
a resilient member being interposed between said pivotable member and the mounting pin to bias the free end of the pivotable member away from the pin; and
an abutment provided at the forward end of the mounting pin for preventing the pivotable member from slipping off the pin.

4,194,850

PIVOTAL MOUNTING ARRANGEMENT

John W. Cranmore, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, United Kingdom

Filed Nov. 20, 1978, Ser. No. 961,873
Claims priority, application United Kingdom, Dec. 2, 1977, 50288/77
Int. Cl.[2] F16C 11/00; F16D 1/12
U.S. Cl. 403—140 9 Claims



1. A pivotal mounting arrangement comprising a member having a recess therein, and a socket element mounted in said recess, said socket element being formed of a resilient material, being adapted to receive and, when mounted in the recess, to hold a ball therein and having at least one outwardly projecting portion which engages against the wall of said recess and opposes withdrawal of said socket element from said recess.

4,194,851

UNIVERSAL HUB FOR GEODESIC DOMES

Herrick B. Littlefield, Darien, Conn., assignor to Polyproducts Corp., Long Island City, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,359
Int. Cl.[2] F16D 1/00, 3/00; F16G 11/00
U.S. Cl. 403—218 11 Claims

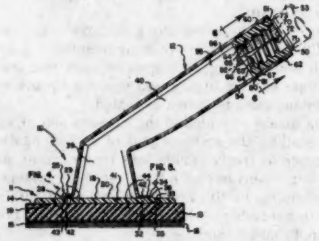
1. A joint hub for interconnecting the struts of a geodesic type structure comprising a pair of identical one piece generally frusto-conical hub members each having first and second opposite faces and a centrally located aperture formed therein, said hub members being adapted to be positioned in superimposed relation to each other with the first face of one hub member facing and extending parallel to the second face of the other hub member to define a frusto-conical slot therebetween for receiving the ends of said struts; means formed on at least one face of said hub member for cooperative interengagement with said end portions of said struts to permit circumferential movement of said struts within said hub members while precluding longitudinal movement; and connection means for extending through said apertures for securing said hub members together while clamping said end portions of said struts between and in engagement with respective first and second faces of the superimposed hub members to hold said struts in a relatively fixed position.

4,194,852

APPLICATOR WITH MULTI-POSITIONAL HANDLE

Charles D. Cupp, Lancaster; Bruce J. Matthies, Clarence Center, and Frederick J. Wood, Jr., Lancaster, all of N.Y., assignors to Shur-Line Manufacturing Co., Inc., Lancaster, N.Y.

Division of Ser. No. 847,763, Nov. 2, 1977, Pat. No. 4,127,911.
This application May 19, 1978, Ser. No. 907,814
Int. Cl.[2] F16B 7/18
U.S. Cl. 403—299 3 Claims



1. An adapter insertable into the open end of a tube to modify the same to matingly receive the externally-threaded portion of a member, said tube being provided with an opening therethrough, said adapter comprising:
a first section having an end surface;
a second section having an end surface;

each of said sections having a substantially semi-cylindrical inner surface provided with cooperative internally-threaded recess segments, having an outer surface simulating half of the cross-sectional shape of said tube, and having longitudinal surfaces joining said inner, outer and end surfaces;

at least one flexible web joining said section end surfaces;

said first section being arranged to be folded through an arc of approximately 180 degrees to overlie said second section through compliant flexure of said web such that said section longitudinal surfaces will be arranged to face one another to form an adapter having an internally-threaded recess and an external surface simulating the cross-sectional shape of said tube;

one of said sections being provided with a lug arranged to be received in said tube opening when said adapter is inserted into said tube to prevent unintended withdrawal of said adapter from said tube;

whereby said adapter may be inserted into said tube to modify the same to matingly receive the externally-threaded portion of a member.

4,194,853

METHOD AND APPARATUS FOR PRODUCING A GROUND COVERING FROM INDIVIDUAL PAVING STONES

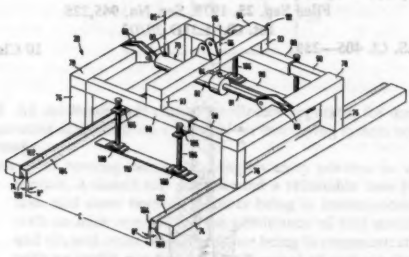
Günter Barth, Am Schwalbenloch 7,, D-7500 Karlsruhe 41, Grotzingen; Fritz von Langsdorff, Blumenstrasse 12, D-7551 Forch:uber Rastatt, and Kurt Rossmann, D-7561 Hörden, all of Fed. Rep. of Germany

Filed Apr. 4, 1978, Ser. No. 893,520

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715476

Int. Cl.² E01C *5/00*

U.S. Cl. 404—73 **12 Claims**



1. A method of producing a ground covering from individual paving stones, comprising arranging a group of individual paving stones in the form of a section of the ground covering to be produced, grasping the group by means of lateral compressive force applied from two opposed sides of the group , hoisting and moving the group thus grasped to the place of laying, and depositing the group there, wherein said step of grasping is carried out by applying such lateral compressive force over a vertically extending region of each opposed side of the group in a manner to produce a vertical distribution of compressive force which is greater in the lower height region of grasp than in the upper height region of grasp and to apply a maximum compressive force below the overall center of gravity of said group, at least in deposited condition of said group.

4,194,854

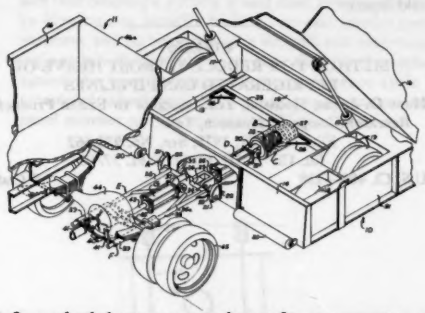
PAVER ATTACHMENT

Herbert N. Mauldin, Rte. 7 View Mont Dr., Greenville, S.C. 29609

Filed Jun. 5, 1978, Ser. No. 912,484

Int. Cl.² E01C *19/18*

U.S. Cl. 404—110 **6 Claims**



1. In a wheeled paver an attachment for securement to a pulling vehicle comprising:

a pair of longitudinally spaced mounting means for fixed connection at forward and rearward locations on said paver;

yieldable shock absorbing means fixed adjacent one end adjacent said rearward location;

a first fluid operated assembly connected adjacent one end thereof adjacent the other end of said shock absorbing means;

a longitudinal elongated arm assembly pivotally connected adjacent said forward location for raising and lowering responsive to said first fluid operated assembly;

securement means carried on said elongated arm assembly remote from said paver for longitudinal movement; and

a second fluid power operated assembly having connection to said securement means for imparting said longitudinal movement thereto.

4,194,855

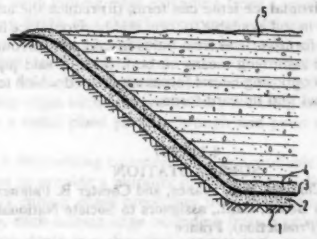
METHOD FOR STORING WASTE MATERIALS AND THEIR COMBUSTION RESIDUES IN A MANNER HARMLESS TO UNDERGROUND WATER

Hanns Egger, Haus Nr. 44, 8110 Hagen bei Murnau, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,291

Int. Cl.² E02D *3/00*

U.S. Cl. 405—128 **6 Claims**



1. A method for storing waste materials and their combustion residues in a manner harmless to underground water, comprising the steps of: digging a pit providing a bottom; laying a first pressure-equalising layer of finely ground loose material on the bottom of the pit such that the layer covers the

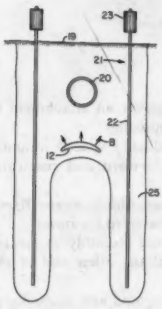
bottom of the pit, placing a humus-resistant, root-resistant and tear-resistant solution-weldable synthetic plastic sheet on said first layer, laying a second pressure-equalising layer of finely ground loose material on top of the synthetic plastic sheet, the layers being formed from refuse slag and/or industrial slag and having a thickness of between about 500 MM, the loose material having been ground dust-fine before being laid in said layers, and material to be stored is then filled into the pit onto said layers.

4,194,856

METHOD FOR REDUCING FROST HEAVE OF REFRIGERATED GAS PIPELINES

Hans O. Jahns, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Aug. 31, 1978, Ser. No. 938,662
Int. Cl.[2] E02D *19/14*; F16L *57/00*
U.S. Cl. 405—130 **9 Claims**



1. A method of limiting frost heaving of a buried refrigerated gas pipeline traversing frost-susceptible soil, said frost heaving being due to the upward force of a horizontal ice lense forming below said pipeline, which comprises:

(a) forming a first plurality of holes in said soil on one side of said pipeline;

(b) forming a second plurality of holes in said soil on the other side of said pipeline substantially opposite said first holes;

(c) placing means for passively removing heat from said soil in said holes resulting in a plurality of substantially opposed pairs of heat removing means, each of said heat removing means being extended from a depth below that at which ice lenses would otherwise form to the atmosphere to transfer heat from the soil to the atmosphere; and

(d) passively cooling the soil adjacent to said pipeline by means of said heat removing means, said heat removing means operating in pairs to (i) lower the depth at which said horizontal ice lense can form, (ii) reduce the amount of water in soil available to form said horizontal ice lenses, and (iii) form vertical frost bulbs in said soil surrounding said heat removing means on both sides of said pipeline such that opposing lateral forces are created which tend to counteract said upward force.

4,194,857

SUBSEA STATION

Georges M. Chateau, Pau, France, and Chester B. Falkner, Jr., Huntington Beach, Calif., assignors to Societe Nationale Elf Aquitaine (Production), France

Division of Ser. No. 743,586, Nov. 22, 1976, Pat. No. 4,120,362. This application Jun. 27, 1978, Ser. No. 919,570
Int. Cl.[2] E02D *29/00*
U.S. Cl. 405—203 **7 Claims**

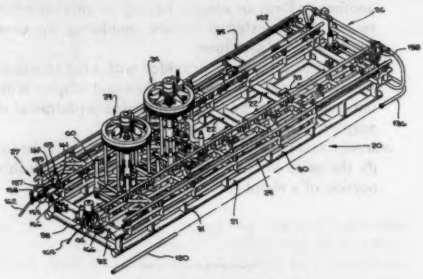
1. In a method of lowering, installing and operating a subsea installation comprising the steps of:

lowering and placing on a seabed a base frame means having a plurality of receptor openings and selectively arranged upstanding connector post means for equipment to be later lowered;

lowering a base guide unit having guide lines to the base frame means and releasably securing said unit thereto;

lowering a module assembly assembled at the surface onto said base frame means and releasably interconnecting said module assembly to said base unit;

lowering and releasably connecting to said base frame means at cooperable connector means thereon an elongated side



structure extending along each side of the base frame means to provide side structures on opposite sides of said module assembly;

releasably interconnecting fluid conducting means on said side structures to said module assembly;

interconnecting adjacent ends of said elongated side structures at one end of said base frame means with end manifold means to cooperably connect said fluid conducting means;

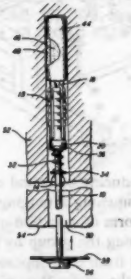
and connecting external flow lines to said end manifold means.

4,194,858

MINE ROOF BOLT ANCHOR INSTALLATION

Gordon C. Evans, Syracuse, N.Y., assignor to The Eastern Company, Naugatuck, Conn.

Filed Sep. 25, 1978, Ser. No. 945,225
Int. Cl.[2] E21D *20/02*
U.S. Cl. 405—259 **10 Claims**



1. Mine roof bolt anchoring apparatus for use in conjunction with a conventional two-compartment resin grouting cartridge inserted into a blind drill hole in the mine roof ahead of said apparatus, the latter comprising:

(a) an elongated bolt having a head at one end and threaded for a portion of its length from the other end;

(b) an expansion anchor including a tapered nut engaged with the threads of said bolt and a hollow expansion shell through which said bolt passes axially to engage said nut

with the smaller end thereof extending into the upper end of said shell;

(c) an engagement surface fixedly associated with the lower end of said shell;

(d) an engagement element coupled to said bolt and having an upper end resiliently biased into contact with said shell engagement surface;

(e) first rotational stop means fixedly associated with said shell engagement surface; and

(f) second rotational stop means fixedly associated with said engagement element upper end, said first and second stop means being relatively arranged

(i) for positive rotational engagement in response to rotation of said bolt and thereby said rotationally coupled engagement element in the direction tending to withdraw said bolt from said threaded engagement with said tapered nut, whereby said bolt, engagement element and anchor are rotated as a unitary structure, and

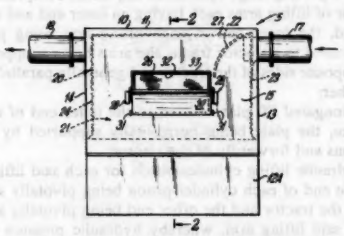
(ii) for sliding contact of said engagement element upper end with said shell engagement surface in response to rotation of said bolt in the direction tending to advance said bolt into said tapered nut, whereby said anchor may be held rotationally stationary as said bolt and engagement element are rotated to effect expansion of said shell into engagement with the wall of said drill hole.

4,194,859

SELF CLEANING COLLECTOR SYSTEM

Bruce T. E. Boon, Wayne, and Armand P. Timmins, Sparta, both of N.J., assignors to Eastern Cyclone Industries, Inc., Fairfield, N.J.

Filed Sep. 8, 1978, Ser. No. 940,469
Int. Cl.[2] B65G 53/60
U.S. Cl. 406—172 **14 Claims**



1. An automatic, self-cleaning collector apparatus for use in separating material from a material-air conveying system comprising:

an outer housing member having an entry portion, an exit portion, a closed top portion, and a releasable base portion, said outer housing member being in communication with an inlet conduit for the admittance of said material and air, said outer housing further being in communication with an outlet conduit for the removal of said air therefrom, said outlet conduit being in communication with means for drawing the air through said collector apparatus;

a perforated inner housing member, disposed within said outer housing member, having an entry portion, an exit portion, and a top portion, the bottom portion of said inner housing member being open such that the releasable base portion of said outer housing and the entry, exit and top portions of said inner housing member define an interior compartment, said inner housing member being in communication with said inlet conduit such that conveying air will separate from said material and will flow through said perforations into passageways between the respective housing members and be removed through said outlet conduit; and

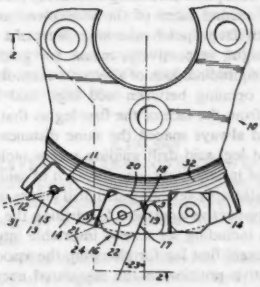
a freely pivotable panel member hingedly connected along its bottom portion to said outer housing member, said panel member normally being in the open position at a predetermined angle relative to the vertical, thus exposing an aperture in the outer housing whereby when said means for drawing air through the apparatus is activated at the start of a conveying cycle, the air initially being drawn therein is drawn through said outer housing aperture thus cleaning a portion of said inner housing member by blowing any particles thereon into said interior compartment, said air being drawn in through said outer housing aperture further acting to close said panel member against the inner housing until the conveyance cycle is completed whereupon the force of gravity causes said panel member to resume its normally open position.

4,194,860

FACE MILLING CUTTER

David A. Hopkins, Troy, Mich., assignor to The Valeron Corporation, Oak Park, Mich.

Filed Jun. 26, 1978, Ser. No. 919,229
Int. Cl.[2] B62D 1/12
U.S. Cl. 407—42 **20 Claims**



1. A face milling cutter comprising a rotatable annular body, means to provide a plurality of circumferentially spaced individual cutting edges projecting from the cutting face of said body, each cutting edge extending from a point of maximum cutting depth in a direction progressively outward from the axis of rotation, progressively backward relative to direction of rotation, and of progressively reduced cutting depth totalling a minor fraction of said outward extension, and supplemental cutting edges each relieved radially inwardly and backwardly from a radial plane passing through said point and the cutter axis.

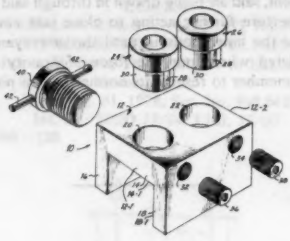
7. A face milling cutter comprising a rotatable annular body, means to provide a plurality of circumferentially spaced individual cutting edges projecting from the cutting face of said body, each cutting edge extending from a point of maximum cutting depth in a direction progressively outward from the axis of rotation, progressively backward relative to direction of rotation, and of progressively reduced cutting depth totalling a minor fraction of said outward extension, said cutting edges including a wiping cutting edge extending from each cutting point inwardly relative to the axis of rotation and substantially in the cutting plane of rotation.

4,194,861

COMPACT DOWEL HOLE SPACING AND DRILLING DEVICE

Russell E. Keller, Frostproof, Fla., assignor to Keller Research & Development, Inc., Frostproof, Fla.

Continuation-in-part of Ser. No. 678,711, May 4, 1976, abandoned. This application Dec. 20, 1977, Ser. No. 862,644
Int. Cl.[2] B23B 49/02
U.S. Cl. 408—109 5 Claims



1. A compact portable dowel hole spacing and drilling device for drilling of parallel pairs of aligned dowel holes in workpieces to be joined to each other and having aligned means in the desired position of joining of the workpieces, the device comprising, a rigid U-shaped base for receiving therein the workpieces, one workpiece at a time, said base including a bight and first and second opposed legs extending in the same general direction therefrom, and said base further having unobstructed open ends for receipt of the workpiece with opposite portions of the workpiece extending outwardly from said ends when first and second faces of the workpiece are in facial engagement with flat perpendicular inner faces of a first of said legs and said bight, respectively, means for guiding a drill along parallel longitudinal axes of apertures extending through said bight and opening between said legs, said axes being equally spaced from the face of the first leg so that the dowel holes are drilled always spaced the same distance from said face of said first leg, said drill guiding means including drill guides positioned in said bight, one for each of said apertures, and means for releasably retaining said drill guides in operative position in the respective apertures for drilling the holes, said retaining means including set screws insertable into threaded bores formed in said first leg for clamping the associated drill guides in operative position in the associated apertures, the second leg having means for clamping the workpiece against said face of said first leg, and said ends having positioning edges coplanar with said face of said first leg and parallel to and equally spaced from adjacent ones of said axes, for alignment of one of said edges with the alignment means of one of the workpieces and the other of said edges for alignment with the alignment means of the other of said workpieces, so that the dowel holes in each workpiece are drilled in correct position for joining the workpieces in precise position as indicated by the aligned means on the workpieces.

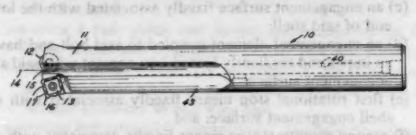
4,194,862

INDEXABLE INSERT DRILL

Raymond T. Zweekly, Royal Oak, Mich., assignor to The Valeron Corporation, Oak Park, Mich.

Filed Sep. 5, 1978, Ser. No. 939,443
Int. Cl.[2] B23B 51/00
U.S. Cl. 408—224 22 Claims

1. An indexable insert drill comprising a drill body a pair of insert pockets formed at one end of said body, one of said pockets having means for locating a first round insert having a circular arcuate cutting edge extending with its foremost point offset from the drill axis by a fractional portion of the insert



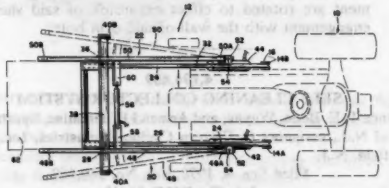
radius, said cutting edge extending from said foremost point substantially through and past said axis.

4,194,863

BIG BALE LOADER

Julius D. Vansickle, and Major J. Vansickle, both of Rte. 3, Boswell, Okla. 74727

Filed Jul. 25, 1978, Ser. No. 927,837
Int. Cl.[2] A01D 87/12
U.S. Cl. 414—24.5 2 Claims



1. Apparatus for use with a tractor having a frame for lifting and transporting large cylindrical hay bales, comprising:

a pair of lifting arms each having an inner end and an outer end, the inner end of each lifting arm being pivotally secured to a tractor frame, the arms being suppported on opposite sides of the tractor and generally parallel to each other;

an elongated lift plate affixed to the outer end of each lift arm, the plate being horizontally supported by the lift arms and forwardly of the tractor;

a hydraulic lifting cylinder-piston for each said lifting arm, one end of each cylinder-piston being pivotally attached to the tractor and the other end being pivotally attached to said lifting arm, whereby hydraulic pressure applied simultaneously to the cylinder-pistons causes the lifting arms to raise said lift plate;

a pair of side arms each having an inner end and an outer end, the inner end of each arm being pivotally secured to a said lifting arm, each side arm slidably resting on said lift plate and the outer end of each side arm being spaced forward of the lifting plate, the said arms being pivotal towards and away from each other, the outer ends of the side arms being adapted to engage a large hay bale therebetween;

a hydraulic grasping cylinder-piston pivotally connected at opposite ends to the side arms whereby the outer ends of the side arms may be spread apart from each other to receive a large hay bale therebetween and moved towards each other to grasp a large bale of hay therebetween and in which condition said lifting arms may be pivoted upwardly to lift the grasped hay bale for transportating it, each of the lifting arms being defined by:

a first portion having inner and outer ends, the inner end being pivotally secured to the tractor, one end of said lifting cylinder-pistons being pivotally secured to the first portion adjacent the outer end thereof;

a second portion having an inner end and an outer end, the inner end being secured to the first portion outer end, the second portion extending forwardly and downwardly of

said first portion and in the same vertical plane thereof; and

a third portion having a lower end and an upper end, the lower end being affixed to the second portion outer end, said lift plate being horizontally secured to the third portion upper end, the lifting arm being dimensioned such that in its downwardly pivoted position the second portion outer end and third power lower end rest on the ground and the outer ends of said side arms are positioned above the ground approximately the radius of a large cylindrical hay bale whereby the side arms are properly positioned for grasping the opposed end of a cylindrical hay bale.

4,194,864

THREE-DIMENSIONAL AUTOMATIC WAREHOUSE EQUIPMENT

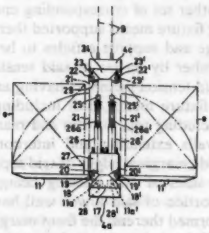
Noriyuki Yamauchi, Kobe; Yoshiaki Toko, Hyogo, and Takao Ehara, Takasago, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1977, Ser. No. 861,004

Claims priority, application Japan, Dec. 27, 1976, 51-156428; Jul. 21, 1977, 52-86618

Int. Cl.[2] B66F 9/14; B65G 1/06

U.S. Cl. 414—283 **5 Claims**



1. A three dimensional automatic warehouse apparatus comprising:

at least two spaced opposed racks defining between them an aisle;

a stacker truck movable along said aisle and having a vertically movable loader thereon, elevator means for raising and lowering said loader to a desired level, and a transfer fork pivotally mounted on said loader for being displacable between an article support position in which said transfer fork projects horizontally from said loader in a direction substantially perpendicular to the plane of movement of said stacker truck along said aisle and a stowed position by rotation through 90° in a plane perpendicular to the plane of movement of said stacker along said aisle;

said racks having a plurality of pillars disposed along said aisle and a plurality of cantilever arms projecting from each pillar toward the aisle at a plurality of levels, the space between adjacent arms on the same level being larger than the width of said transfer fork, and the space between the ends of said cantilever arms pillars on opposite sides of said aisle being greater than the dimension of said stacker truck transversely of the direction of the aisle with the fork in the stowed position and less than the dimension of said stacker truck transversely of the direction of the aisle with the fork in the projected position.

4,194,865

INSERT LOADING APPARATUS IN TRANSFER ENCAPSULATION

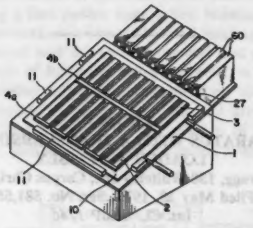
Kazuo Bandoh, Kyoto, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Japan

Filed May 11, 1978, Ser. No. 904,961

Claims priority, application Japan, May 12, 1977, 52-55120; Dec. 23, 1977, 52-155894

Int. Cl.[2] B65G 1/08

U.S. Cl. 414—403 **5 Claims**



1. An apparatus for loading inserts to be encapsulated from cartridges into a loading frame, comprising an inclined loading frame base provided with a plurality of guide members, means for stopping the inserts in position on the guide members, said stopping means being arranged on the loading frame base, means for lifting up a loading frame to load the inserts on the guide members into a loading frame, and an insert feeding mechanism elevatably mounted on the rear end of the loading frame base, by which inserts are periodically fed from the cartridges to the guide members, said insert feeding mechanism comprising a cartridge base on which cartridges are placed, means for pivoting said cartridge base between horizontal position and inclined position, and means for intermittently elevating the cartridge base.

4,194,866

SLIVER CAN TRANSPORTING DOLLY

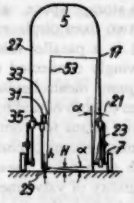
Bruno Fritschi, Uster; Ludek Malina, Kloten, both of Switzerland, and Max Oestreicher, Kussaburg, Fed. Rep. of Germany, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Apr. 6, 1978, Ser. No. 893,888

Claims priority, application Switzerland, Apr. 12, 1977, 4478/77

Int. Cl.[2] B60P 1/30

U.S. Cl. 414—459 **8 Claims**



1. A sliver can transporting dolly comprising:

a base frame;

said base frame embodying a pair of spaced substantially parallel, longitudinally extending support beams structured to receive cans therebetween;

means for laterally tilting and engaging with the underside of the tilted cans and for lifting cans standing between said longitudinal support beams of said base frame;

said means for tilting, engaging and lifting the cans comprises:

a first pair of back-holding rods;

means for mounting said first pair of back-holding rods for substantially vertical movement;

a second pair of rods, one of which rods defines a gripper rod for the cans and the other of which rods defines a tilting rod for the cans; and

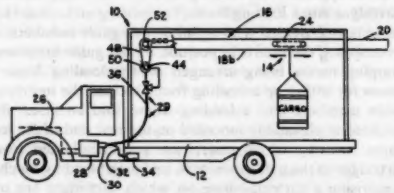
means for mounting said second pair of rods to be substantially horizontally and vertically movable.

4,194,867

AN APPARATUS WITH A TRANSVERSING HOIST LOADER ASSEMBLY

Charles G. Bragg, 158 Whiteley Dr., Corpus Christi, Tex. 78418

Filed May 28, 1975, Ser. No. 581,551
Int. Cl.[2] B60P 1/46
U.S. Cl. 414—542 **6 Claims**



2. A traversing hoist assembly, in combination, comprising:

a prime mover means for providing a source of power;

a power take-off means drivingly connected to said prime mover means;

a structural means defining a cargo storage space having a longitudinal axis;

a traversing hoist assembly means disposed substantially within said cargo storage space, said hoist assembly means including a hoist carriage means for movement along the longitudinal axis of the cargo storage space, said hoist carriage means having grappling means for handling material;

a fluid power drive transmission means drivingly connected to the power take-off means for moving the hoist carriage means in a fore and aft direction along the longitudinal axis of the cargo storage space, said transmission means includes at least two fixed displacement hydraulic motor means connected in a parallel relationship, a hydraulic pump means drivingly connected to the power take-off means, with said pump means having a discharge opening connected in series to both of said hydraulic motor means, a plurality of valve means for controlling said hydraulic motor means, conduit means connecting said plurality of valve means with each other, means for simultaneously actuating said plurality of valve means wherein said conduit means connect said hydraulic motor means in a fluid series relationship, whereby one hydraulic motor means drive said hoist carriage in either a fore or aft direction and the other hydraulic motor means effectively maintains the height of the grappling means relative to the cargo storage space; and

said fluid power drive transmission means further including means for selective actuation of only said other hydraulic motor means for raising or lowering the grappling means.

4,194,868

VALVE LIFTING ATTACHMENT FOR FORK LIFT

Leon P. Walker, 5420 Alvarado Pl., NE., Albuquerque, N. Mex. 87110, and Manuel Gabaldon, 1711 Standord Dr. SE., Albuquerque, N. Mex. 87106

Filed Jun. 26, 1978, Ser. No. 918,830
Int. Cl.[2] B66F 9/06
U.S. Cl. 414—607 **5 Claims**

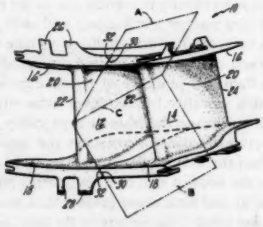
1. A lifting attachment for a fork lift of the type including laterally spaced elongated horizontal lifting forks, said attachment including an elongated horizontal support member for spanning and support from said forks, said support member including a plurality of longitudinally spaced anchor means, a plurality of elongated flexible tension members including one set of corresponding ends thereof engaged with and supported from said anchor means with said tension members swingably supported from said anchor means and depending downwardly therefrom, the other set of corresponding ends of said tension members having fixture means supported therefrom adapted to releasably engage and support articles to be suspended from the support member by means of said tension members, the lower ends of said tension members having anchors supported therefrom, said fixture means each including a hollow open sided housing including top, bottom and rear walls as well as opposite side walls extending and interconnected between corresponding side marginal edges of said top, bottom and rear walls, the front sides of said housing being open, the front marginal edge portion of said lower wall having a forwardly opening notch formed therein, the front marginal edge portion of said top wall having a vertical aperture formed therethrough, said anchors including portions thereof passed through said apertures.

4,194,869

STATOR VANE CLUSTER

Nicholas Corcokios, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 29, 1978, Ser. No. 920,583
Int. Cl.[2] F01D 1/04
U.S. Cl. 415—216 **3 Claims**



1. In a vane cluster formed of a first vane having an inner

platform and an outer platform, and a second vane having an inner platform and an outer platform, the improvement comprising:

first and second vanes joined at the inner platforms along a plane A and at the outer platforms along a plane B wherein the planes A and B intersect along a line of intersection which passes between the inner and outer platforms and are oriented so as to form inwardly facing, joining surfaces on one of said vanes and outwardly facing, joining surfaces on the other of said vanes.

4,194,870

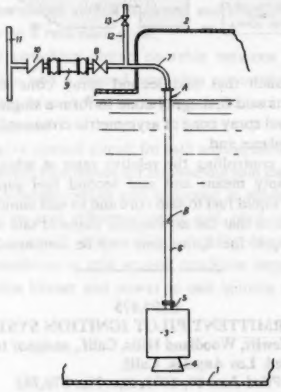
SLAM PREVENTION IN LIQUID PUMPING

Edmund G. Tornay, New York, N.Y., assignor to Energy Transportation Group, Inc., New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,084

Int. Cl.² F04B *15/08*

U.S. Cl. 417—53 **5 Claims**



1. The method of operating a pumping installation for a liquid which vaporises at NTP, said installation having:

(a) a pump having an inlet and an outlet, said pump being immersed in a body of liquid;

(b) a riser pipe having a lower end connected to the pump within the body of liquid and having an upper end at a point above the level of the body of liquid, and

(c) a stop valve communicating with the upper end of the riser pipe,

said method comprising the steps of:

(i) with the stop valve closed, injecting non-liquefiable gas into the riser pipe to form a cushion of said gas in the riser pipe by forcing the liquid in the riser pipe down to a level below that of the remainder of the body of liquid,

(ii) with the stop valve closed, operating the pump to force liquid up the riser pipe until any vapour in the riser pipe has been turned to liquid and the cushion of non-liquefiable gas has become further compressed,

(iii) opening the stop valve and continuing the operation of the pump to pump liquid from the body of liquid through the stop valve to a delivery point.

4,194,871

ROTARY PISTON INTERNAL COMBUSTION ENGINE

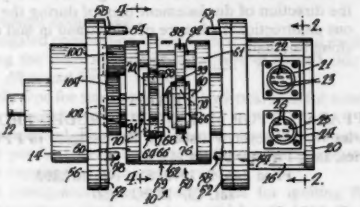
Karl E. Studenroth, 1609 Euclid Ave., Chicago Heights, Ill. 60411

Filed Nov. 28, 1977, Ser. No. 855,369

Int. Cl.² F01C *1/00*; F02B *53/00*

U.S. Cl. 418—38 **17 Claims**

1. A rotary piston internal combustion engine comprising a block assembly providing a piston chamber, a first piston member rotatably mounted in said block assembly for non-uniform rotation in said piston chamber, a second piston member rotatably mounted in said block assembly for non-uniform rotation in said piston chamber and cooperating with said first piston member to form at least two variable volume combustion chambers in said piston chamber between said piston members, each of said piston members having at least one piston portion with a hollow chamber therein communicating with its adjacent combustion chamber, a driven member rotatably mounted in said block assembly and having a drive shaft adapted to be connected to drive another device, first means between said first piston member and driven member for regulating and transmitting the rotation of said first piston member, said first means including a first pusher cam, a first holding cam and a pair of first followers, said first pusher and holding cams being mounted on one of said driven member and first piston member, said first pair of followers being mounted on the other of said driven member and first piston member, second means between said second piston member and said driven member for regulating and transmitting the rotation of said second piston member, said second means including a second pusher



cam, a second holding cam and a pair of second followers, said second pusher and holding cams being mounted on one of said driven member and second piston member, said second pair of followers being mounted on the other of said driven member and second piston member, said first and second pusher cams being located relatively rotatively behind said first and second pair of followers, respectively, said first and second holding cams being located relatively rotatively ahead of said first and second pair of followers, respectively, and third means in said block assembly for synchronizing the actions of said first and second means, said first, second and third means permitting one of said first and second piston members, then the other, to rotate alternatively ahead, and then behind, said driven member as said driven member is rotated by said piston members, whereby said piston members move relative one another so that at times first one piston member then the other stands still while the other piston member then the first piston member rotates, and said combustion chambers therebetween undergo changes in volume for the intake, compression, expansion and exhaust processes of the internal combustion engine while said driven member and output shaft rotate uniformly.

4,194,872

APPARATUS FOR THE COOLING, CALIBRATING AND STRAIGHTENING OF A PLATE-SHAPED CONTINUOUSLY EXTRUDED SYNTHETIC-RESIN STRAND

Wilhelm Hinterkeuser, St. Augustin-Menden; Norbert Herres, Hennef-Allner, and Paul Reitemeyer, Troisdorf-Bergheim, all of Fed. Rep. of Germany, assignors to Reifenhäuser KG, Troisdorf, Fed. Rep. of Germany

Filed Sep. 2, 1977, Ser. No. 830,334

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639910

Int. Cl.² B29C *24/00*; B29D *7/10*

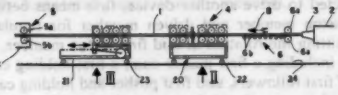
U.S. Cl. 425—72 R **10 Claims**

1. An apparatus for the continuous cooling, calibration and straightening of a plate-shaped synthetic-resin strand, compris-

ing, in combination with an extruder for continuously producing said strand, and means spaced from said extruder defining a path for the produced strand;

guide means along said path downstream of said extruder;

at least one roll stand reciprocatingly shiftable on said guide means downstream of said extruder, said roll stand being provided with a multiplicity of pressing rollers flanking said strand and in contact with opposite faces thereof, said multiplicity of rollers including rollers spaced apart along



said strand on opposite sides thereof, said means defining said path including means downstream of said rollers for displacing said strand unidirectionally and continuously along said path through said roll stand; and

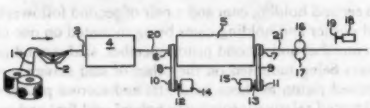
an oscillating drive for reciprocatingly shifting at least some of said rollers back and forth along said strand parallel to the direction of displacement thereof during the continuous unidirectional advance of said strand in said direction along said path.

4,194,873

APPARATUS FOR MAKING PULTRUDED PRODUCT

Charles W. Killmeyer, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 9, 1978, Ser. No. 867,852
Int. Cl.[2] B29G 7/00
U.S. Cl. 425—93 **10 Claims**



1. Apparatus for producing a fiber reinforced pultruded rod, comprising means for coating fibers with resin, first stationary shaping means for shaping the coated fibers into a rod with at least one groove or protrusion, means for partially curing said shaped rod, second shaping means generally shaped in the cross-section of said rod, means to rotate said second shaping means and said partially cured rod in order to form a rod with said fibers following the contour of said at least one groove or protrusion, and means to pull said rod through said first shaping means and said second shaping means.

4,194,874

VARIABLE FLAME SHAPE OIL BURNER

Temple S. Voorheis, Atherton, and Louis D. Siegert, Burlingame, both of Calif., assignors to Coen Company, Burlingame, Calif.

Filed Jan. 3, 1978, Ser. No. 866,746
Int. Cl.[2] F23C 5/00; F23Q 9/00; F23D 11/10
U.S. Cl. 431—8 **9 Claims**

1. A liquid fuel fired burner assembly for producing a single variable shaped asymmetric flame, said assembly comprising:

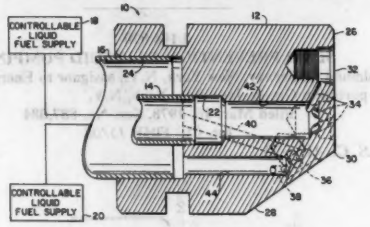
a tip head for receiving and carrying tip means in relatively fixed, spaced-apart relation, said tip head including means defining a hollow core for receiving a first fuel supply and means defining a hollow annulus about said hollow core for receiving a second fuel supply;

a first fuel supply means for controllably supplying liquid fuel to a first tip means through said core;

a second fuel supply means for controllably supplying liquid fuel to a second tip means through said annulus;

first liquid fuel spray tip means mounted to said tip head and disposed parallel to a central axis of said burner assembly for forming a first dispersed liquid fuel spray cone having its axis parallel to said central axis of said burner;

second liquid fuel spray tip means mountable to said tip head for forming a second dispersed liquid fuel spray cone, said second tip means being disposed divergent of said central axis on one side of a plane through said axis, and wherein the spray cone angle of said second tip means is substantially wider than the spray cone angle of said first tip



means such that said second spray cone substantially intersects said first spray cone to form a single composite liquid fuel spray cone of asymmetric cross-section relative to said plane; and

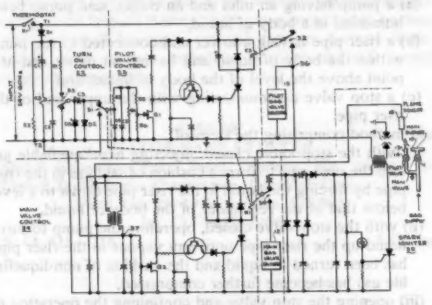
means for controlling the relative rates at which said first fuel supply means and said second fuel supply means provide liquid fuel to said core and to said annulus, respectively, such that the asymmetric shape of said single composite liquid fuel spray cone may be continuously varied.

4,194,875

INTERMITTENT PILOT IGNITION SYSTEM

William L. Hewitt, Woodland Hills, Calif., assignor to Cam-Stat Incorporated, Los Angeles, Calif.

Filed Jan. 17, 1978, Ser. No. 870,245
Int. Cl.[2] F23Q 9/08
U.S. Cl. 431—45 **9 Claims**



1. In a pilot ignition and valve control system for a gas burner having

a main burner, a main valve operated by a main solenoid for providing gas to said main burner, a pilot burner, and a pilot valve operated by a pilot solenoid for providing gas to said pilot burner,

a flame sensor and a flame sensor circuit for providing a flame signal when the pilot burner is ignited,

ignition electrodes adjacent said pilot burner and an ignition circuit for connection to said ignition electrodes,

a first switching circuit operable between a first condition turning said ignition circuit on to provide sparking at said

electrodes, and a second condition turning said ignition circuit off and supplying gas to said main burner,

a main valve control circuit for said first switching circuit and having the flame signal of said flame sensor circuit as an input, whereby when a flame is sensed at said pilot burner said main valve control circuit actuates said first switching circuit from said first condition to said second condition, and

a pair of input terminals for connection to an AC power source through a thermostat switch,

the improvement including in combination:

a storage capacitor;

a charging circuit connected to said input terminals for charging said capacitor when the thermostat switch is closed, and including means for automatically disconnecting said capacitor from said charging circuit at a time after said thermostat switch is closed and connecting said capacitor to a reference point;

a second switching circuit operable between a first open condition and a second condition connecting said input terminals to said first switching circuit and to said pilot solenoid; and

a pilot valve control circuit for said second switching circuit and having first means for connecting said capacitor as an input, whereby when said capacitor is charged and connected to said reference point said pilot valve control circuit actuates said second switching circuit from said first condition to said second condition supplying gas to said pilot burner and power to said ignition electrodes.

4,194,876

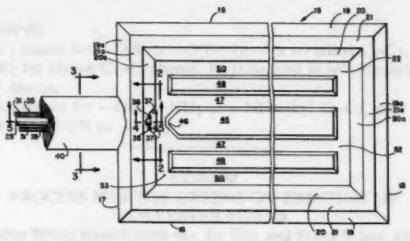
LIQUID BURNPITS

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Jenkintown, Pa.

Filed Sep. 29, 1977, Ser. No. 837,700

Int. Cl.[2] F23D *13/20*

U.S. Cl. 431—202 **5 Claims**



1. A burnpit comprising

an elongated combustion space open at the top and enclosed along the sides within opposite pairs of spaced side and end dikes and having a floor,

a supply pipe for supplying fluent hydrocarbons for combustion in said burnpit,

one of said end dikes having a burner head at an inner side face portion thereof and spaced above said floor to which said supply pipe is connected, and

means contiguous to said burner head for igniting fluent hydrocarbons discharged from said burner head,

said floor having a plurality of panels extending longitudinally therealong separated by a plurality of channels.

4,194,877

DYE-CONTAINING POLYMER COMPOSITION

John I. Peterson, Falls Church, Va., assignor to United States of America, Washington, D.C.

Filed Nov. 28, 1977, Ser. No. 855,397
Int. Cl.[2] D06P 3/00; C08K 5/00
U.S. Cl. 8—4 5 Claims

1. A method for the preparation of a pH indicating dye-containing polymer composition, which comprises: subjecting acrylamide monomer to polymerization conditions in the presence of a pH indicating color changing dye material selected from the group consisting of phenol red, brillant yellow and rosolic acid to produce a hydrophilic polymer composition of acrylamide and said dye.

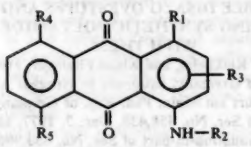
4,194,878

PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 903,005
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720661
Int. Cl.[2] C09B 1/00
U.S. Cl. 8—39 B 1 Claim

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, in which process the materials are padded or printed in common manner with aqueous baths or printing pastes of disperse dyestuffs, and the dyestuffs are subsequently fixed by the action of liquid or gaseous methylene chloride or both of the said phases of methylene chloride, the improvement that use is made of a dyestuff of the general formula (1)

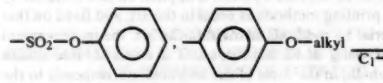


(1)

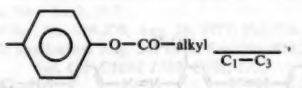
in which

R_1 represents $-NH_2$, $-NH-CH_2-CH_2-OH$,

R_2 represents hydrogen, alkyl of from 1 to 3 carbon atoms or $-(CH_2)_n-OH$, in which n stands for an integer of from 1 to 3, or phenyl, R_3 represents hydrogen, —O—alkyl C_1-C_3,



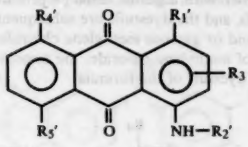
or



R_4 stands for —OH, $-NH_2$ or —NH—alkyl C_1-C_3, and

R_5 represents —OH or $-NO_2$,

or of the general formula (2)



(2)

in which

R'_1 stands for —OH, or —NH—(n— or i—)alkyl C_1-C_4,

R'_2 for alkoxy C_1-C_3 phenyl, R_3 is defined as in formula (1) above,

R'_4 stands for —OH, $-NH_2$ or —NH-alkyl C_1-C_3, and

R'_5 for —OH or $-NO_2$.

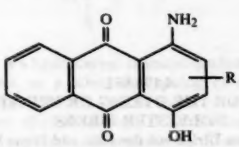
4,194,879

PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

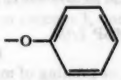
Filed May 4, 1978, Ser. No. 903,008
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720585
Int. Cl.[2] C09B 1/00; D06P 1/20
U.S. Cl. 8—39 B 1 Claim

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, in which process the materials are padded or printed in common manner with aqueous baths or printing pastes of disperse dyestuffs, and the dyestuffs are subsequently fixed by the action of liquid or gaseous methylene chloride or both of the said phases of methylene chloride, the improvement that dyestuffs of the general formula



(1)

in which R is an alkoxy group of from 1 to 3 carbon atoms, the group



or $-O(CH_2)_n$-alkoxy$_{C_1-C_3}$,

in which n stands for an integer of from 2 to 6, are used.

4,194,880

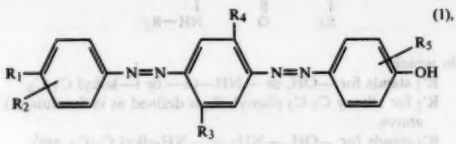
PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

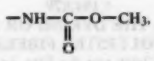
Filed May 4, 1978, Ser. No. 903,004
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720660
Int. Cl.[2] C09B 27/00; D06P 1/02
U.S. Cl. 8—41 B 2 Claims

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, in which process the materials are padded or printed

in common manner with aqueous baths or printing pastes of disperse dyestuffs, and the dyestuffs are subsequently fixed by the action of liquid or gaseous methylene chloride or both of the said phases of methylene chloride, the improvement that use is made of a dyestuff of the formula


(1),

in which R_1 stands for hydrogen, hydroxy, nitro or



R_2 and R_3 each stand for hydrogen, chlorine or alkyl from 1 to 3 carbon atoms or an alkoxy group of from 1 to 3 carbon atoms, R_4 represents hydrogen, chlorine, alkyl from 1 to 3 carbon atoms, an alkoxy group from 1 to 3 carbon atoms or —CH=CH—CH=CH— forming the naphthalene ring, and R_5 stands for hydrogen, alkyl from 1 to 3 carbon atoms or alkoxy from 1 to 3 carbon atoms, which dyestuffs have a solubility in methylene chloride of at least 2 g/l.

4,194,881

PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schön, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

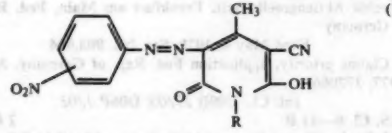
Filed May 4, 1978, Ser. No. 903,007

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720585

Int. Cl.[2] C09B *27/00*; D06P *1/02*

U.S. Cl. 8—41 B **1 Claim**

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, whereat in known manner the said materials are padded or printed with an aqueous liquor or printing paste of disperse dyestuffs, and subsequently the dyestuffs are fixed by means of liquid or gaseous methylene chloride or of both of the said phases of methylene chloride, the improvement that a dyestuff of the formula


(1)

in which R represents hydrogen or an alkyl group of 1 to 4 carbon atoms, is applied.

4,194,882

PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

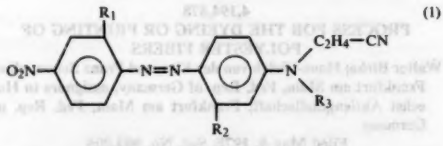
Filed May 4, 1978, Ser. No. 903,051

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720587

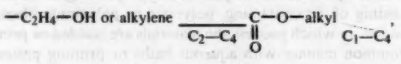
Int. Cl.[2] C09B *27/00*; D06P *1/02*

U.S. Cl. 8—41 B **1 Claim**

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, whereat in known manner the said materials are padded or printed with an aqueous liquor or printing paste of disperse dyestuffs, and subsequently the dyestuffs are fixed by means of liquid or gaseous methylene chloride or of both of the said phases of methylenechloride, the improvement that a dyestuff of the formula


(1)

in which R_1 represents hydrogen, chlorine, bromine or cyano, R_2 represents hydrogen, chlorine or alkyl of 1 to 3 carbon atoms and R_3 stands for alkyl of 1 to 5 carbon atoms,



is applied

4,194,883

WATER-SOLUBLE DISAZO DYESTUFFS AND PROCESS FOR COLORING SYNTHETIC POLYAMIDE FIBRES WITH THEM

Hermann Fuchs, Kelkheim, and Klaus Filzinger, Hofheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

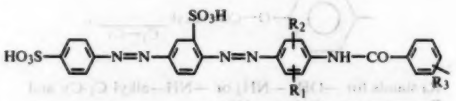
Continuation of Ser. No. 858,438, Dec. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 833,986, Sep. 16, 1977, abandoned, which is a continuation of Ser. No. 641,929, Dec. 18, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 936,184

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1974, 2460466

Int. Cl.[2] C09B *27/00*; D06P *1/02*

U.S. Cl. 8—41 B **4 Claims**

1. In a process for colouring a synthetic polyamide fibre material wherein an acid dyestuff is applied on this material by dyeing or printing methods as usual in the art, and fixed on that fibre material by methods as usual in the art, the improvement consists of using as an acid dyestuff a water-soluble disazo dyestuff which, in the form of the free acid, corresponds to the formula



in which R_1 and R_2 are identical or different from each other

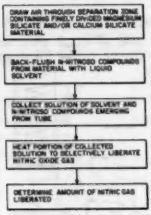
and each is hydrogen, methyl, ethyl or methoxy, and R_3 is hydrogen, chlorine, nitro or alkyl of 1 to 4 carbon atoms.

4,194,884

METHOD AND APPARATUS FOR AIR SAMPLING AND FILTRATION

David P. Rounbehler, Concord, and David H. Fine, Framingham, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Nov. 24, 1978, Ser. No. 963,626
Int. Cl.[2] G01N *31/06, 31/08, 31/12, 33/00*
U.S. Cl. 23—232 R **15 Claims**


DRAW AIR THROUGH SEPARATION ZONE CONTAINING FINELY DIVIDED MAGNESIUM SILICATE AND/OR CALCIUM SILICATE MATERIAL
BACK-FLUSH N-NITROSO COMPOUNDS FROM MATERIAL WITH LIQUID SOLVENT
COLLECT SOLUTION OF SOLVENT AND N-NITROSO COMPOUNDS EMERGING FROM TUBE
HEAT PORTION OF COLLECTED SOLUTION TO SELECTIVELY LIBERATE NITRIC OXIDE GAS
DETERMINE AMOUNT OF NITRIC GAS LIBERATED

15. A method of determining the content in air of N-nitroso dimethylamine, N-nitroso-diethylamine, N-nitroso-dipropylamine, N-nitroso-morpholine, N-nitroso-pyrolidine, N-nitroso-diethanolamine, N-nitroso-dihexylamine, N-nitroso-nornicotine, and N-nitroso-methylvinylamine, said method comprising in sequence the steps of:

directing a predetermined volume of air through a separation zone containing finely divided particles of a dry, solid, activated magnesium silicate material of 60–80 mesh size and said zone being pervious to the flow of air therethrough;

removing said N-nitroso compounds from said sorbent material by passing a liquid solvent consisting of 50 percent dichloromethane and 50 percent methanol by volume through said separation zone in the opposite direction from the flow of said volume of air;

collecting the solution formed by the leading portion of said liquid solvent and said N-nitroso compounds after emergence of said solution from said separation zone, said volume of solution collected being sufficiently small so as to not require concentration during subsequent steps to measure the content of said N-nitroso compounds contained therein;

chromatographically separating said N-nitroso compounds from nitrate and nitrite compounds, if any, present in said collected solution;

heating the portion of said solution having said N-nitroso compounds to a temperature in the range 300° C. to 500° C. to selectively liberate nitric oxide (NO) in the gaseous phase; and

measuring in the gaseous phase the amount of nitric oxide (NO) liberated.

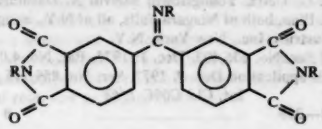
4,194,885

IMINODIIMIDES OF BENZOPHENONETETRACARBOXYLIC DIANHYDRIDE AND COMPOSITIONS THEREOF

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 828,379, Aug. 29, 1977, Pat. No. 4,131,610. This application Aug. 31, 1978, Ser. No. 938,598
Int. Cl.[2] C10M *1/32*; C10L *1/22*
U.S. Cl. 44—63 **7 Claims**

1. A composition comprising a major amount of an organic medium selected from the group consisting of lubricating oils and fuel oils and a minor amount effective to impart pour depressant properties and ultra-violet stabilization characteristics thereto of a compound having the following general structure:



where R is H, alkyl having from 1 to about 36 carbon atoms and aryl, aralkyl or alkaryl having from 6 to about 36 carbon atoms.

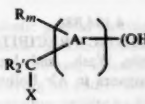
4,194,886

HALOALKYL HYDROXY-AROMATIC CONDENSATION PRODUCTS AS FUEL ADDITIVES

David E. Ripple, Kirtland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 901,174, Apr. 28, 1978, which is a division of Ser. No. 684,818, May 10, 1976, Pat. No. 4,108,783, which is a continuation-in-part of Ser. No. 459,424, Apr. 9, 1974, abandoned. This application Feb. 5, 1979, Ser. No. 9,715
Int. Cl.[2] C10L *1/22, 1/88*
U.S. Cl. 44—70 **7 Claims**

1. A fuel composition comprising a major amount of a normally liquid fuel and a minor but carburetor cleaning or anti-screen clogging amount of a product made by the process comprising reacting at a temperature ranging from 100° C. to about 300° (A) at least one alpha haloalkyl aromatic compound of the general formula



wherein Ar is a hydrocarbyl aromatic nucleus of 6 to about 30 carbon atoms, or a substituted analog of such an aromatic nucleus substituted with one or more up to 3 each of lower alkoxy, lower alkylthio, chloro, or nitro substituents, each R is a nonfused hydrocarbyl group of about 25 to about 700 carbon atoms, X is a halogen atom, each R' is independently a hydrogen atom, an alkyl group of 1 to 36 carbon atoms, or a halogen-substituted alkyl group of 1 to about 36 carbon atoms, n is 1 to 3 and m is 1 to 5 with the provisos that (i) the total number of carbon atoms in both the R' groups does not exceed 36 and (ii) where m exceeds 1, one of the R groups can also be

group, with

(B) at least one alpha-beta olefinically unsaturated compound selected from the group consisting of $C_{2\text{-}40}$ hydrocarbyl nitriles, $C_{2\text{-}40}$ hydrocarbyl carboxylic acids and anhydrides, esters, amides and ammonium and metal salts of said $C_{2\text{-}40}$ carboxylic acids; the ratio of (A) to (B) is between about 0.5:1 to about 2:1,

the reaction of (A) with (B) resulting in the formation of a carbon-to-carbon bond, said bond including the carbon of at least one

group.

4,194,887

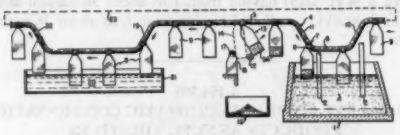
FUSED ALUMINA-ZIRCONIA ABRASIVE MATERIAL FORMED BY AN IMMERSION PROCESS

Herbert F. G. Ueltz, Youngstown; Melvin A. Dashineau, and James J. Pino, both of Niagara Falls, all of N.Y., assignors to U.S. Industries, Inc., New York, N.Y.

Division of Ser. No. 636,403, Dec. 1, 1975, Pat. No. 4,073,096. This application Dec. 9, 1977, Ser. No. 859,115

Int. Cl.[2] C09C *1/68*

U.S. Cl. 51—309 8 Claims



1. An abrasive product consisting essentially of a thin plate of abrasive material having an ultra-fine crystal size, orientation and structure, said material being highly uniform throughout the thickness of said plate and being prepared by

(a) melting an abrasive mix containing aluminum oxide and zirconium oxide in a stationary electric arc furnace,

(b) removably positioning a cool substrate material in the melted mix in the furnace for a predetermined time period to deposit a coating of solidified abrasive material on said substrate,

(c) withdrawing the entire substrate and the solidified coating from the melt, and

(d) removing the solidified abrasive material from the substrate.

4,194,888

ELECTROSTATIC PRECIPITATOR

James J. Schwab, Seattle, Wash., and Jacob Cooper, North Hollywood, Calif., assignors to Air Pollution Systems, Inc., Kent, Wash.

Continuation-in-part of Ser. No. 726,244, Sep. 9, 1976, abandoned. This application Jan. 28, 1977, Ser. No. 763,524

Int. Cl.[2] B03C *3/74*

U.S. Cl. 55—2 8 Claims

6. A method of removing particles from a particle entrained gas comprising:

sequentially directing said particle entrained gas through a plurality of non-overlapping, radially and axially expanding, radially and circumferentially uniform electrostatic fields having an applied average intensity of greater than 10 kv per centimeter at standard atmospheric conditions, each of said field being generated by a disc shaped discharge electrode concentrically mounted with a tubular outer electrode, said discharge electrodes being spaced at least 1.2 discharge electrode gaps apart from each other and having a smoothly curved outer periphery with the edge radius of said periphery being at least 0.02 of the radius of said outer electrode; and

passing said charged particle entrained gas through an elongated, electric field downstream of each of said electrostatic fields such that said charged particles are deflected toward a collection electrode.

4,194,889

METHOD OF AND APPARATUS FOR PROCESSING SULFUR-CONTAINING EXHAUST GAS

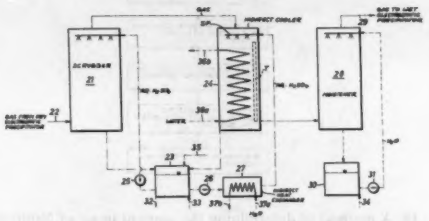
Dieter Wanner, Liederbach, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,803

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710627

Int. Cl.[2] B03C *3/01, 3/16;* B01D *47/00*

U.S. Cl. 55—7 15 Claims



1. A method of treating a sulfur-containing exhaust gas produced in a metallurgical roasting furnace for use in a contact-process plant for the production of sulfuric acid which comprises the steps of:

(a) abstracting heat from said exhaust gas by indirect heat exchange and thereafter removing particulates from the gas;

(b) scrubbing the gas from step (a) with an aqueous sulfuric acid solution;

(c) passing the scrubbed gas of step (b) into and through an indirect gas cooler to reduce the moisture of the gas to not more than about 60 g H_2O/m^3 at 40° C. (STP) and to reduce the temperature of the gas;

(c_1) spraying a sufficient amount of aqueous sulfuric acid into the gas while it is passing through the indirect gas cooler of step (c);

(d) subjecting the indirectly cooled gas from step (c) to wet electrostatic precipitation; and

(e) passing the gas subjected to the wet electrostatic precipitation of step (d) to a contact process plant for the production of sulfuric acid.

13. An apparatus for the treatment of a sulfuric-acid-containing gas produced in a roasting furnace for use in a contact-process production of sulfuric acid, said apparatus comprising:

(a) a waste-heat boiler connected to said furnace for abstracting heat from said gas;

(b) a dry-process electrostatic precipitator connected to said waste-heat boiler;

(c) a scrubbing tower connected to said dry-process electrostatic precipitator and provided with a reservoir containing aqueous sulfuric acid and means for recirculating said aqueous sulfuric acid between said scrubbing tower and said reservoir;

(d) an indirect cooler connected to said scrubbing tower for indirectly cooling the scrubbed gas therefrom, said indirect cooler comprising:

(d_1) an upright tower,

(d_2) vertically extending tubes in said tower and communicating with a gas space above said tubes,

(d_3) means for passing water into contact with external surfaces of said tubes, and

(d_4) means for spraying aqueous sulfuric acid into the space in (d_2) for improving the heat exchange between the gas and said tubes in (d_2) and for drying the gas;

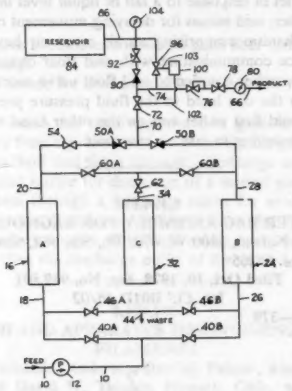
(e) a wet-process electrostatic precipitator downstream of said indirect cooler and in flow communication therewith;
(f) means for collecting aqueous sulfuric acid from said indirect cooler and feeding the collected aqueous sulfuric acid to said reservoir; and
(g) means for feeding aqueous sulfuric acid from said reservoir to said spraying means (d_4).

4,194,890

PRESSURE SWING ADSORPTION PROCESS AND SYSTEM FOR GAS SEPARATION

Norman R. McCombs, Tonawanda, and Edward E. Vrana, West Seneca, both of N.Y., assignors to Greene & Kellogg, Inc., Tonawanda, N.Y.

Continuation of Ser. No. 745,285, Nov. 26, 1976, abandoned. This application Feb. 1, 1978, Ser. No. 874,167
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—18 **26 Claims**



1. In a pressure swing process for fractionating at least one component from a gaseous mixture by selective adsorption in each of at least two adsorption zones by sequentially passing the gaseous mixture from a feed stream through a first adsorption zone until the first zone is about saturated while simultaneously purging and then pressurizing a second adsorption zone and then passing the gaseous mixture from the feed stream through the second adsorption zone until the second zone is about saturated while simultaneously purging and then pressurizing the first adsorption zone, the improvement comprising withdrawing gas from one of said adsorption zones at the end of the adsorption operation therein in a direction countercurrent to feed flow and directly introducing the withdrawn gas along with the gaseous mixture from the feed stream into the other of said adsorption zones in a direction cocurrent with feed flow and after pressurization thereof to equalize the pressures in said adsorption zones from the feed ends thereof.

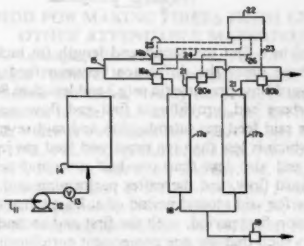
24. In a system for fractionating at least one component from a gaseous mixture by pressure swing adsorption including a first adsorption bed having a gas inlet and a gas outlet, at least one additional adsorption bed having a gas inlet and a gas outlet, means for connecting said gas inlets of said adsorption beds to a feed gas stream, a product outlet and output conduit means for coupling said gas outlets of said adsorption beds to said product outlet, the improvement comprising:
(a) a reservoir;
(b) first reservoir conduit means connected to said output conduit means and to said reservoir, said first conduit means including flow control means allowing gas flow only in one direction from said output conduit means to said reservoir;
(c) second reservoir conduit means connected to said reservoir and to said output conduit means, said second conduit means including valve means for controlling flow of product gas from said reservoir to said output conduit; and
(d) valve means in said output conduit between said second reservoir conduit and said adsorption beds and control means operatively connected to said reservoir conduit valve means and to said output conduit valve means for opening said reservoir valve means in response to closure of said output valve means for supplying product gas from said reservoir to said product outlet.

4,194,891

MULTIPLE BED RAPID PRESSURE SWING ADSORPTION FOR OXYGEN

David E. Earls, Suffern, and Gary N. Long, Putnam Valley, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,551
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—26 **11 Claims**



1. In a rapid adiabatic pressure swing process for air separation to produce at least 35 mole percent oxygen product gas in which feed air at 10 to 50 psig. is introduced to the first end of an adsorbent bed having an end-to-end length of 1 to 3.5 feet and comprising crystalline zeolite molecular sieve of at least 5 Angstrom apparent pore size and 40 to 120 mesh particle size, with nitrogen being selectively adsorbed and said oxygen product gas being continuously discharged from the bed second end during a feed air introduction period, and a reverse outward flow period following said feed air introduction period during which oxygen purging-nitrogen desorbate gas is released from the bed first end, all in a repetitive two step cycle sequence: the improvement comprising at least two and not more than three adsorbent beds arranged in alternating flow sequence with a single product manifold joined to the second end of such beds, each bed having a feed air introduction period of 0.1 to 6 seconds, a reverse outward flow period with oxygen product gas flowing directly from another bed to said second end as purge gas such that the reverse outward flow period/feed air introduction period time ratio is at least 0.5 but less than 2 and the total cycle time is 0.2 to 18 seconds, and prior to the succeeding feed air introduction period, oxygen product gas discharged from a different bed flows directly to said second end without first end gas release as a product repressurization period not exceeding 1.5 times the feed air introduction period.

4,194,892

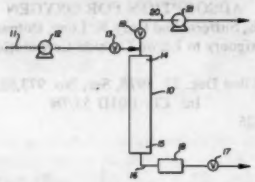
RAPID PRESSURE SWING ADSORPTION PROCESS WITH HIGH ENRICHMENT FACTOR

Russell L. Jones, Charleston; George E. Keller, II, South Charleston, and Rex C. Wells, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,066
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—58 **14 Claims**

1. In a rapid adiabatic pressure swing process for the separation of a multi-component feed gas by selectively adsorbing at

least one component in a single adsorption bed of small particles by introducing feed gas to a first end and discharging at least one component depleted gas at the second end with a repetitive two-step cycle sequence at the first end of feed gas introduction and reverse outward flow of at least one component-depleted purging one component desorbate gas and a total cycle time of less than 30 seconds, the improvement comprising; providing said feed gas at pressure of at least 8 psig. at said first end of said adsorbent bed, said feed gas having a separation factor of at least 2 with said adsorbent for feed pressures only less than 30 psig. and said adsorbent bed comprising particles smaller than 20 mesh but larger than 120 mesh



being packed in a first to second end length (in inches) not exceeding three times the difference between feed gas and reverse outward flow pressure (in psig.) and less than 96 inches as said adsorbent bed, providing a first end flow suspension step between said feed gas introduction and said reverse outward flow which is less than ten times said feed gas introduction period and also less than one-half a second period of reverse outward flow, and thereafter performing said reverse outward flow for said second period of at least twice the feed gas introduction first period, with the first and second period and gas flows such that the one component enrichment factor is at least 4.

4,194,893

PUMPING APPARATUS

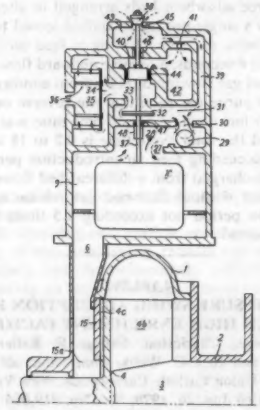
Ronald Woodhouse, and Walter W. Russell, both of 403/433, Woolwich Rd., Charlton, London, SE7 7AP, England

Division of Ser. No. 614,085, Sep. 17, 1975, abandoned. This application Aug. 19, 1977, Ser. No. 826,116

Claims priority, application United Kingdom, Sep. 17, 1974, 40565/74

Int. Cl.[2] B01D *19/00*

U.S. Cl. 55—168 **3 Claims**



1. A single entry centrifugal impeller pump comprising, a volute casing having axial end walls with an inlet orifice in one axial end wall, a peripheral outlet, and a gas exhaust passage in the other end wall; an impeller having an impeller disc mounted for rotation with its rear face adjacent said other axial end wall of the volute casing, and a plurality of impeller blades extending from the front face of the impeller to define an eye of the impeller in communication with said inlet orifice of the volute casing; a liquid reservoir chamber located above and in communication with said gas exhaust passage of the volute casing, said chamber having a first outlet for connection to a gas exhaust means and a second outlet communicating with atmosphere; a float valve mechanism located in said reservoir chamber and having first and second valve members arranged, upon raising of the float within said chamber, respectively to close said first outlet and to open said second outlet; means for discharging liquid from said reservoir chamber to the front side of said impeller when said reservoir chamber is at atmospheric pressure; and means for delaying movement of said float valve mechanism to open said first outlet and close said second outlet in response to a fall of liquid level in said reservoir chamber; said means for delaying movement of said float valve mechanism comprising an air reservoir having an air bleed orifice communicating with said float chamber, and a balancing member coupled to said float valve mechanism and exposed on the one hand to the fluid pressure prevailing upstream of said first outlet and on the other hand to the fluid pressure prevailing in said air reservoir.

4,194,894

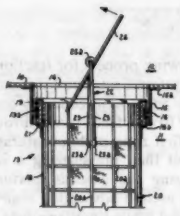
FILTER BAG ASSEMBLY FOR BAGHOUSES

Richard D. Noland, 1900 W. 47th Pl., Ste. 308, Shawnee Mission, Kans. 66205

Filed Oct. 10, 1978, Ser. No. 949,891

Int. Cl.[2] B01D *46/02*

U.S. Cl. 55—379 **6 Claims**



1. A filter bag assembly for a baghouse having a tube sheet which presents an opening therethrough, said assembly comprising:

a bag-like fabric filter having an upper rim positionable beneath said tube sheet;

releasable band means for suspending said filter from the tube sheet in registration with the opening thereof, said releasable means permitting installation and removal of said filter from beneath said tube sheet;

a cage adapted to fit in said filter to provide skeletal support therefor;

a hanger coupled with said cage for suspending same in said filter; and

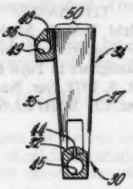
a support bar pivotally coupled to said hanger in a manner to support same in position to suspend said cage in the filter, said support bar having a first position horizontally spanning the upper rim of said filter to prevent passage of said support bar downwardly into said filter, and a second position wherein said support bar is oriented nonhorizontally to pass downwardly within said filter whereby the filter bag assembly may be installed and removed from beneath the tube sheet.

4,194,895

FLUID FLOW METHOD AND APPARATUS USED IN MANUFACTURE OF GLASS FIBERS

Thomas K. Thompson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 3, 1978, Ser. No. 930,464
Int. Cl.[2] C03B 37/02
U.S. Cl. 65—2 12 Claims



1. Apparatus in combination with a glass fiber forming bushing comprising:

(a) a first nozzle for discharge of a first gaseous fluid therefrom;

(b) duct means for receiving the first gaseous fluid discharged from the first nozzle and for discharging the first gaseous fluid therefrom through a discharge outlet; and

(c) a second nozzle for discharge of a second gaseous fluid therefrom through a discharge outlet for modifying the first gaseous fluid upon discharge from the duct means, the discharge outlet of the duct means being substantially larger than the discharge outlet of the second nozzle.

4,194,896

METHOD AND APPARATUS FOR FORMING GLASS FILAMENTS

Alex P. Symborski, Anderson; Ray M. Fulmer, Aiken, both of S.C., and David W. Thomas, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 28, 1978, Ser. No. 937,382
Int. Cl.[2] C03B 37/02
U.S. Cl. 65—3 R 18 Claims

1. Apparatus for forming glass filaments comprising:

(a) a plurality of spaced apart forming sections wherein each section is comprised of;

(i) a feeder adapted to supply a plurality of streams of glass to be attenuated into continuous filaments, a zone being defined by the paths of the free falling streams;

(ii) applicator means laterally spaced from said zone adapted to apply a coating to the advancing filaments;

(iii) first guide means laterally spaced from said zone adapted to gather the filaments into a strand, the guide means and applicator means being positioned such that the coating is applied to the filaments external to said zone and intermediate the feeder and the first guide means along the path of advancement of the filaments; and

(iv) secondary attenuation means laterally spaced from the zone adapted to advance said filaments as waste;

(b) a primary attenuation means adapted to simultaneously attenuate the streams from each section into filaments; and

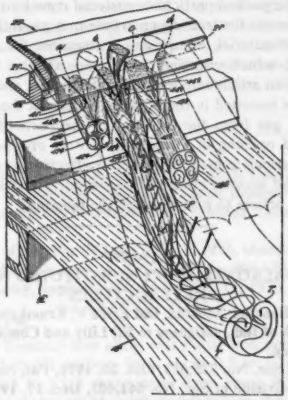
(c) second guide means positioned to advance the strands from each section external to said zones as the strands are advanced by the primary attenuation means; said feeders, applicator means, first guide means and second guide means being positioned such that said strands and waste are advanced along spaced apart paths external to all of said zones when advanced by the secondary attenation means.

4,194,897

METHOD FOR MAKING FIBERS FROM GLASS OR OTHER ATTENUABLE MATERIALS

Marcel A. Lévecque, Birchrunville, Pa.; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 762,789, Jan. 25, 1977, Pat. No. 4,102,662, which is a continuation-in-part of Ser. No. 676,755, Apr. 14, 1976, Pat. No. 4,118,213, and Ser. No. 557,282, Mar. 11, 1975, Pat. No. 4,016,964, said Ser. No. 676,755, is a continuation-in-part of Ser. No. 557,282, , which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,885,940. This application Jun. 21, 1978, Ser. No. 917,480
Int. Cl.[2] C03B 37/04
U.S. Cl. 65—5 2 Claims



1. A method for converting molten attenuable thermoplastic material into fibers comprising delivering in a first path a stream of molten material from a supply means, developing a gaseous jet in a second path, deflecting said jet from said second path into a third path intersecting said first path, the deflected gaseous jet having a zone of laminar flow characterized by high induction of ambient gas in the region of intersection of the path of the stream of molten material of the path of the deflected jet, and developing a gaseous blast in a fourth path intersecting said third path, the jet having a cross-sectional dimension smaller than the blast and having kinetic energy per unit of volume higher than that of the blast thereby penetrating the blast in the region of intersection of the paths of the deflected jet and blast.

4,194,898

METHOD AND APPARATUS FOR TREATMENT OF ARTICLES IN A FLUIDIZED BED

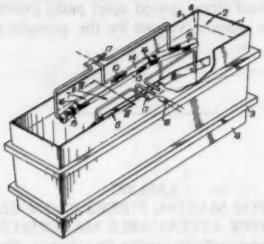
Donald C. Wright, Parbold; Brian Marsh, Orrell, and Willem Wiechers, Omskirk, all of England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Sep. 21, 1978, Ser. No. 944,611

Claims priority, application United Kingdom, Sep. 29, 1977, 40564/77

Int. Cl.[2] C03B *25/04, 29/04*

U.S. Cl. 65—114 **14 Claims**



1. A method of treating an article in gas-fluidised particulate material, comprising advancing the article along a path leading into and through the gas-fluidised particulate material, and extracting gas from the particles of the particulate material at a localised region of the particulate material across said path at an extraction rate sufficient to defluidise the particulate material in that region to an extent which provides in the gas-fluidised bed a wall of packed particulate material which is effective to obturate the path and delimit a zone of the fluidised particulate material whilst permitting passage of an article through the packed particulate material constituting that wall.

9. Apparatus for treating an article in a gas-fluidised bed of particulate material, comprising a container for the gas-fluidised bed, which container is formed with an opening for passage of an article into and through the bed, and gas-extraction means mounted in the container adjacent the opening for extracting gas from the particles of the particulate material across said opening at a rate sufficient to produce a wall of packed particulate material which is effective to obturate the opening and prevent escape of particulate material while permitting an article to pass through the opening.

4,194,899

FLUOROALKOXYPHENYL-SUBSTITUTED NITROGEN HETEROCYCLES

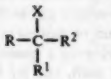
Robert L. Benefiel, Manilla, and Eriks V. Krumkalns, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 735,659, Oct. 26, 1976, Pat. No. 4,110,099, which is a division of Ser. No. 641,403, Dec. 17, 1975, Pat. No. 4,002,628, which is a division of Ser. No. 371,106, Jun. 18, 1973, Pat. No. 3,967,949. This application May 25, 1978, Ser. No. 909,609

Int. Cl.[2] A01N *43/60*; C07D *241/12*

U.S. Cl. 71—76 **12 Claims**

1. A compound of the formula



wherein

R is 2-pyrazinyl;

R^1 is C_1–C_{12} alkyl or C_3–C_8 cycloalkyl;

R^2 is trifluoromethoxyphenyl tetrafluoroethoxyphenyl or pentafluoroethoxyphenyl;

X is hydrogen, hydroxy, lower alkoxy, lower alkylthio, or lower alkanoyloxy;

and the nonphytotoxic acid addition salts thereof.

4,194,900

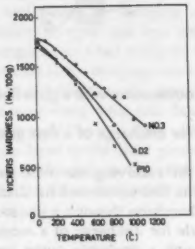
HARD ALLOYED POWDER AND METHOD OF MAKING THE SAME

Tsuneyuki Ide; Ken-ichi Takagi; Michio Watanabe; Seiichi Ohhira; Masahito Fukumori, and Yoshikazu Kondo, all of Kudamatsu, Japan, assignors to Toyo Kohan Co., Ltd., Japan

Filed Oct. 5, 1978, Ser. No. 949,424

Int. Cl.[2] B22D *23/08*

U.S. Cl. 75—0.5 C **4 Claims**



1. Hard alloy powder comprising:

B—from 3 to 20% by weight,

Al—less than 3% by weight,

Si—from 0.3 to 5% by weight,

O—less than 2.5% by weight,

at least one metal selected from the group consisting of Cr, Mo, W, Ti, V, Nb, Ta, Hf, Zr, Co and Ni, in the following amounts: Cr from 5 to 35% by weight, Mo from 1 to 35% by weight, W from 0.5 to 30% by weight and each of Ti, V, Nb, Ta, Hf, Zr, Co and Ni less than 15% by weight, and

the balance being at least 10% by weight of Fe.

4,194,901

PROCESS FOR PRODUCING GRAPHITE AGGLOMERATES, AND PRODUCTS OBTAINED BY IT

Mario Gambacorta, Ancona, Italy, assignor to S.I.A.P. Societa Industriale Agglomerati e Prodotti Petroliferi S.p.A., Venezia-Mestre, Italy

Continuation of Ser. No. 696,365, Jun. 15, 1976, abandoned. This application Mar. 7, 1978, Ser. No. 884,218

Claims priority, application Italy, Jun. 23, 1975, 615 A/75

Int. Cl.[2] C21C *7/00*

U.S. Cl. 75—48 **4 Claims**

1. A method of increasing the carbon content of steel and cast iron products during their production, by

collecting graphitic dusts resulting from production of graphite electrodes, electrode pastes or graphite anodes;

admixing said dusts with (1) a non-graphitic carbon material selected from the group consisting of pit-coal and coke and (2) a binder of coal tar pitch, to form an admixture;

heating said admixture to about the melting temperature of the binder so as to obtain an amalgamated mixture;

molding the amalgamated mixture to form graphite-containing agglomerates; and

adding said graphite-containing agglomerates to a metallurgical bath in which steel or iron is being produced,

wherein the non-graphitic carbon material is present in an amount sufficient to reduce the amount of binder required to form said graphite-containing agglomerates so that (a) the concentration of the binder in said agglomerate is low enough to allow dissolution of the agglomerate in said

bath and (b) the concentration of the binder in said bath is the highest binder concentration which is acceptable in the ultimate steel or cast iron product.

4,194,902

DESULFURIZATION AGENT FOR FERROUS MELTS AND METHOD OF USING THE SAME

Werner Gmohling, Hufschlag, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,659
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741588
Int. Cl.[2] C21C *7/02*
U.S. Cl. 75—55 5 Claims

1. A desulfurizing agent for ferrous metal melts consisting essentially of a mixture of calcium carbide, calcium carbonate containing finely divided carbon dispersed therein and from about 1% to 12% by weight of said mixture of coal dust.

4,194,903

METHOD OF PRODUCING STEEL WITH THE LOWEST POSSIBLE SULFUR CONTENT BY DESULFURIZATION OF PIG IRON WITH MAGNESIUM COKE

Peter Hausen, and Klaus-Dieter Schülz, both of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 841,460, Oct. 12, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,061
Int. Cl.[2] C21C *7/02*
U.S. Cl. 75—58 4 Claims

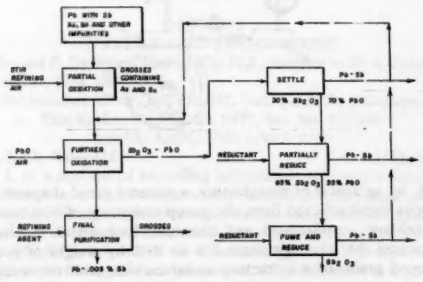
1. A process for production of steel with low sulfur content by desulfurization of a melt of pig iron, said method comprising in combination the steps of: introducing magnesium coke by an immersing bell into a melt of pig iron; after initial reaction of magnesium with melt, introducing inert rinsing gas to stir the melt until all magnesium has reacted; removing magnesium bell; continuing to introduce inert rinsing gas to separate magnesium sulfide particles from melt to collect in slag maintained on surface; tilting the melt to move slag to low side and introducing inert rinsing gas to form slag-free zone on the high side; and withdrawing slag containing magnesium sulfide by engagement behind slag on high side to scrape slag from melt.

4,194,904

PRODUCTION OF PURIFIED LEAD AND ANTIMONY OXIDE

George S. Foerster, Hightstown, and Harold A. Stuhler, Brown Mills, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,284
Int. Cl.[2] C22B *13/06*
U.S. Cl. 75—78 7 Claims



1. A method for producing purified lead and antimony oxide, comprising:

a. oxidizing a molten lead alloy containing more than 0.1% antimony to the extent that purified molten lead containing a maximum of 0.1% antimony and a first slag consisting essentially of lead oxide and antimony oxide are formed;

b. separating said purified lead and said first slag;

c. adding a reducing agent to said first slag to reduce a sufficient quantity of lead oxide to lead to thereby create a second slag consisting essentially of about 40% to 80% antimony oxide, balance essentially lead oxide;

d. maintaining said second slag at a temperature above about 1250° F. to permit antimony oxide to fume from said second slag;

e. periodically adding a reducing agent to said second slag to reduce a sufficient quantity of lead oxide to lead thereby maintaining said second slag at a composition of about 40% to 80% antimony oxide, balance essentially lead oxide during antimony oxide fume formation; and

f. collecting said antimony oxide fume.

4,194,905

SOLVENT-EXTRACTION PROCESS FOR RECOVERY AND SEPARATION OF METAL VALUES

Lawrence V. Gallacher, East Norwalk, Conn., assignor to King Industries, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 671,346, Mar. 29, 1976, Pat. No. 4,018,865. This application Apr. 7, 1977, Ser. No. 785,669
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.[2] C22B *23/04, 15/00, 19/22*
U.S. Cl. 75—101 BE 13 Claims

1. In a process for recovering an extractable metal value from an aqueous medium comprising said metal value, said process comprising contacting said aqueous medium at a pH of below about 4 with a solvent-extractant comprising an alkyl-aromatic sulfonic acid and a water-immiscible solvent for said sulfonic acid and for complexes of said sulfonic acid with said metal value to provide an extract of said metal value in said solvent-extractant, separating the solution thus formed from the aqueous raffinate depleted in said metal value, and recovering said metal value from said extract, the improvement which comprises using didodecylnaphthalene sulfonic acid as said extractant.

4,194,906

WEAR RESISTANT LOW ALLOY WHITE CAST IRON

Tibor Krantz, Pierrefonds, and Jean C. Farge, Rosemere, both of Canada, assignors to Noranda Mines Limited, Ontario, Canada

Continuation of Ser. No. 747,105, Dec. 3, 1976, abandoned. This application May 16, 1978, Ser. No. 906,620
Claims priority, application Canada, Sep. 13, 1976, 261107
Int. Cl.[2] C22C *37/10*
U.S. Cl. 75—125 6 Claims

1. A wear resistant low alloy white cast iron consisting of from about 2 to 4% carbon, from about 0.3 to 1.2% silicon, from about 0.5 to 1.5% manganese, from about 0.5 to 1.5% copper and from about 0.25 to 1% molybdenum, the remainder being substantially all iron except for incidental impurities commonly found in cast iron, said alloy having a microstructure consisting essentially of carbide and martensite.

4,194,907

GOLD ALLOYS FOR FUSION TO PORCELAIN

Min H. Tsai, Van Nuys, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Oct. 20, 1978, Ser. No. 953,247
Int. Cl.[2] C22C *5/00*
U.S. Cl. 75—134 N 22 Claims

1. A castable dental alloy suitable for bonding with dental porcelain comprising about 30–50% gold, 30–50% palladium, 5–30% silver, 0.01–1.0% ruthenium and a member selected

from the groups consisting of silicon, boron, germanium and mixtures thereof in an amount sufficient to prevent greening and discoloration of porcelains when fired thereon.

4. A castable dental alloy suitable for bonding with dental porcelain without a green color after porcelain is fired on the cast alloy, consisting essentially of:

gold: 30–50 percent;
palladium: 30–50 percent;
silver: 5–30 percent;
indium: 0–10 percent;
tin: 0–10 percent;
ruthenium: 0.01–1.0 percent;
other platinum family elements 0–3 percent, and;
silicon, boron, germanium or a mixture thereof 0.01–5 percent.

4,194,908

MAGNESIUM ALLOYS

William Unsworth, 47 Thorn Rd., Swinton, Manchester; John F. King, 19 Brookside Crescent, and Stephen L. Bradshaw, 89 Lords', Stile La., both of Lancaster, all of England

Continuation of Ser. No. 751,739, Dec. 17, 1976, abandoned. This application Mar. 28, 1978, Ser. No. 890,893

Claims priority, application United Kingdom, Dec. 17, 1975, 51612/75

Int. Cl.[2] C22C *23/00*

U.S. Cl. 75—168 J **13 Claims**

1. A magnesium-based alloy consisting essentially of, by weight, other than iron and other impurities:

Mg	at least 88 %
Ag	1.6–3.5 %
Rare earth metals of which at least 60% is neodymium	0.1–2.3 %
Th	0–2.3 %
Y	0.1–2.5 %
Zn	0–0.5 %
Cd	0–1.0 %
Li	0–6.0 %
Ca	0–0.8 %
Ga	0–2.0 %
In	0–2.0 %
Tl	0–5.0 %
Pb	0–1.0 %
Bi	0–1.0 %
Cu	0–0.15 %
Zr	0–1.0 %
Mn	0–0.2 %

the amount of rare earth metals and Th together not exceeding 3.0% and when no more than 0.5% of Y is present the minimum amount of Th is defined by the equation

$$\text{weight \% Th} = \frac{0.5 - \text{weight \% Y}}{4},$$

the maximum contents of Zr and Mn together being limited by their mutual solubility.

4,194,909

FORGEABLE NICKEL-BASE SUPER ALLOY

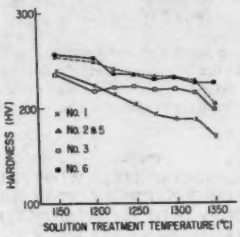
Taizo Ohmura, Ohmiya; Akihiko Sakonooka, Ageo; Kensyo Sahira, Urawa, and Noboru Yonezawa, Ohmiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 627,064, Oct. 30, 1975, abandoned. This application Apr. 28, 1977, Ser. No. 791,792

Claims priority, application Japan, Nov. 16, 1974, 49-131571; Nov. 30, 1974, 49-136634

Int. Cl.[2] C22C *19/05*

U.S. Cl. 75—171 **6 Claims**



1. A forgeable nickel-base super alloy free of cobalt and titanium and consisting essentially of, in weight percent:

carbon—0.11 to 0.25
chromium—10.0 to 25.0
tungsten—10.0 to 25.0
aluminum—0.1 to 1.0
at least one element selected from the group consisting of calcium, magnesium and rare earth metal—0.001 to 0.05,

the minimum and maximum percentages of calcium (i), magnesium (ii) and rare earth metal (iii) being, respectively,

(i) 0.005 and 0.05,
(ii) 0.001 and 0.02,
(iii) 0.001 and 0.02,

and the balance nickel and incidental impurities.

4,194,910

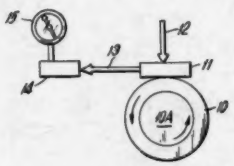
SINTERED P/M PRODUCTS CONTAINING PRE-ALLOYED TITANIUM CARBIDE ADDITIVES

M. Kumar Mal, Spring Valley, and Stuart E. Tarkan, Monsey, both of N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,357

Int. Cl.[2] C22C *9/12, 19/08, 21/20, 38/00*

U.S. Cl. 75—236 **11 Claims**



1. As an article of manufacture, a sintered metal shape of a matrix metal selected from the group consisting of iron-base, nickel-base, copper-base and aluminum-base metals having dispersed therethrough about 5% to 20% by weight of pre-alloyed grains of a refractory metal carbide with the metal matrix making up essentially the balance, said pre-alloyed refractory carbide grains dispersed through said matrix being less than 100 mesh in size and consisting essentially of about 15% to 60% by weight of refractory metal carbide alloyed

with a metal from the group consisting of iron-base and nickel-base metals making up essentially the balance of said grains, said sintered shape being characterized by enhanced resistance to wear and abrasion.

7. As an article of manufacture, a sintered metal shape of a matrix metal selected from the group consisting of iron-base, nickel-base, copper-base and aluminum-base metals having dispersed therethrough about 5% to 20% by weight of pre-alloyed rounded grains of titanium carbide with a steel matrix making up essentially the balance, said pre-alloyed grains having a particle size of less than 100 mesh, said steel matrix having a composition selected from the group consisting of:

(1) about 1% to 6% Cr, up to about 6% Mo, up to about 2% V, up to about 3% Co, up to about 2% Ni, about 0.3% to 0.8% C and the balance essentially iron;

(2) about 6% to 12% Cr, about 0.5% to 5% Mo, about 0.6% to 1.2% C, up to about 5% W, up to about 2% V, up to about 3% Ni, up to about 5% Co and the balance essentially iron; and

(3) about 3% to 7% Cr, about 2% to 6% Mo, about 0.1% to 1% Ni, about 0.3% to 0.7% C and the balance essentially iron;

said pre-alloyed rounded grains of titanium carbide consisting essentially of about 15% to 60% by weight of said titanium carbide of said pre-alloyed composition,

said sintered shape being characterized by enhanced resistance to wear and abrasion.

4,194,911

INHIBITOR REMOVING BATH FOR DIRECT POSITIVE COLOR PHOTOGRAPHIC DEVELOPMENT

William A. Huffman, Minneapolis; R. Dean Lowrey, White Bear Lake; Geoffrey C. Nicholson, Woodbury, and Bruce Wittnebel, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 429,667, Dec. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 325,455, Jan. 22, 1973, abandoned. This application Jul. 17, 1975, Ser. No. 596,651

Int. Cl.[2] G03C *7/16, 5/50*

U.S. Cl. 430—357 **6 Claims**

1. An inhibitor removing bath for effecting color formation in an exposed color photographic element which has already undergone a color reversal which bath comprises:

(a) color accelerating agent selected from the group consisting of ethylene diamine and β-phenyl ethyl amine in a concentration of at least 0.05 moles/liter,

(b) contrast control agent selected from the group consisting of alkali metal salts of iodine and bromine, and citrazinic acid, and

(c) pH control agent providing a pH of 11 to 13 within the bath,

said bath further comprising less than 0.05 moles of phosphate and the absence of color developer.

4,194,912

WATER BASED PHOTORESIST

Edmund B. Davidson, Short Hills, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 410,392, Oct. 29, 1973, abandoned. This application Sep. 28, 1977, Ser. No. 837,166

Int. Cl.[2] G03C *5/00, 1/495, 1/66*

U.S. Cl. 430—322 **3 Claims**

1. In a method of recording information whereby a photosensitive layer that becomes more soluble in a developer solvent after exposure to actinic radiation is coated on a substrate, exposed to a light pattern and developed with a developer solvent so as to remove the solubilized portion, the improvement which comprises employing as the photosensitive layer a composition comprising from about 1 to 20 percent by weight of polyethylene imine having a molecular weight high enough so that it dries to form a non-tacky film, about 5 to 15 percent by weight of a dichromate sensitizer, said percentages based on the total weight of said composition, and the balance water, and wherein the developer solvent is water.

4,194,913

ELECTROLESS TIN AND TIN-LEAD ALLOY PLATING BATHS

Thomas F. Davis, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 574,979, May 6, 1975, Pat. No. 4,093,466. This application Dec. 5, 1977, Ser. No. 857,069

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.[2] C23C *3/02*

U.S. Cl. 106—1.22 **13 Claims**

1. An aqueous bath suitable for immersion deposition of essentially tin and tin-lead alloys onto copper or copper alloy substrates, said bath comprising:

(a) a soluble plumbous salt in an amount from about 0.5 grams to about 25 grams per liter calculated on the basis of elemental lead including the maximum soluble in said bath;

(b) tin as a soluble stannous salt in an amount of from about 5 to 150 grams per liter;

(c) a thiourea as a sulfur containing complexing agent in an amount of from about 40 grams per liter to about 150 grams per liter; and

(d) sufficient hydrochloric acid or hydrobromic acid to provide a pH for the bath in the range of 0.6 to 1.0;

wherein, in said deposition of essentially tin, said plumbous salt is present in sufficient amount to act as a rate of deposition enhancer, and wherein said bath will deposit said essentially tin and tin-lead alloys onto copper or copper alloy substrates by immersion deposition at a rate of at least 85 microinches in 5 minutes at a temperature of 170° F.

4,194,914

HEAT-RESISTING CERAMIC FIBERS AND METHOD FOR MANUFACTURE THEREOF

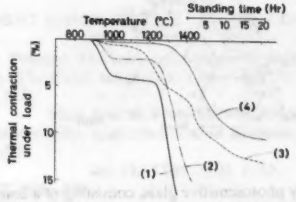
Yoshiro Moriya, Kawanishi; Kazuhito Ikai, Ohgaki, and Makoto Tanaka, Gifu, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo and Ibigawa Electric Industry Ltd., Gifu, both of, Japan

Filed Feb. 27, 1978, Ser. No. 881,743

Claims priority, application Japan, Mar. 1, 1977, 52/22508

Int. Cl.[2] C09K *3/28*

U.S. Cl. 106—18.14 **20 Claims**



1. Highly heat-resistant fibers possessing a thermal contraction under load of not more than 10% at a temperature of 1400° C., comprising: ceramic fibers composed predominantly of silica and alumina each present in the fibers in an amount of at least 25% wt.% and a combined amount of at least 80 wt.% and containing very small precipitated crystals of cristobalite and/or mullite close to the surface of the individual fibers, said precipitated crystals formed by heat treatment of said fibers coated with a phosphorus compound such that from 0.5 to 10% by weight based on P_2O_5 of said phosphorus compound is

incorporated into said ceramic fibers, the size and distribution of said precipitated crystals to the fibers being controlled by the introduction of the indicated quantity of said phosphorus compound into said fibers.

13. A method for preparing highly heat-resistant fibers possessing a thermal contraction under load of not more than 10% at a temperature of 1400° C., comprising:

coating the surface of ceramic fibers containing silica and alumina each in an amount of at least 25 wt.% with a phosphorous-containing compound such that said fibers are coated with from 0.5 to 10% by weight of said phosphorous-containing compound;

drying said coated fibers; and

heat-treating said coated fibers to a temperature of at least 600° C.

4,194,915

FOUNDRY MOLD AND CORE WASH ADDITIVES

Roderick B. Perkins, West University, Tex., assignor to N L Industries, Inc., New York, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,514

Int. Cl.² B28B *7/38*

U.S. Cl. 106—38.25 **29 Claims**

1. A foundry mold and core wash additive comprising from 66.75% to 80.05% of an organophilic clay selected from the group consisting of organophilic hectorite, organophilic montmorillonite, organophilic attapulgite, and mixtures thereof, and from 19.95% to 33.25% of a skin-forming agent, said agent being an alcohol soluble, hexane insoluble thermoplastic resin derived from pine wood.

4,194,916

REVERSIBLY PHOTOSENSITIVE GLASS

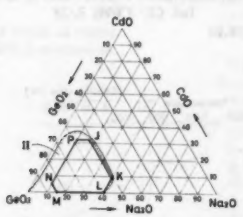
Ken Kumata, Musashi-Murayama, and Hiroshi Namikawa, Tokyo, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 18,945

Claims priority, application Japan, May 16, 1978, 53-57183

Int. Cl.² C03C *3/26, 3/12*

U.S. Cl. 106—47 R **1 Claim**



1. A reversibly photosensitive glass, consisting of a composition having CdO, GeO_2 and Na_2O in the proportions falling within the area enclosed with straight lines connecting Point J (32 mol% of CdO, 51 mol% of GeO_2 and 17 mol% of Na_2O), Point K (9 mol% of CdO, 51 mol% of GeO_2 and 40 mol% of Na_2O), Point L (0 mol% of CdO, 60 mol% of GeO_2 and 40 mol% of Na_2O), Point M (0 mol% of CdO, 85 mol% of GeO_2 and 15 mol% of Na_2O), Point N (5 mol% of CdO, 85 mol% of GeO_2 and 10 mol% of Na_20) and Point P (32 mol% of CdO, 58 mol% of GeO_2 and 10 mol% of Na_20), plus 0.1 to 3 mol%, based on the combined amount of the abovementioned components, of Tl_2O.

4,194,917

FIRED CERAMIC HAVING DENSE AND LOW THERMAL EXPANSION CHARACTERISTICS

Hiroji Sakemi; Tomohiro Morishita; Hideji Numata, and Takuro Ono, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jun. 7, 1978, Ser. No. 913,367

Claims priority, application Japan, Jun. 14, 1977, 52-69475

Int. Cl.² C04B *35/18, 35/20, 35/50*

U.S. Cl. 106—62 **3 Claims**

1. A fired dense ceramic possessing low thermal expansion characteristics, consisting essentially of: from 0.3 to 8 wt. % of at least one rare earth oxide selected from the group consisting of Y_2O_3 and CeO_2 in cordierite, said fired ceramic having a thermal expansion coefficient less than 0.3% at 25° C. to 1000° C. and having a porosity less than 10%.

4,194,918

ALKALI METAL SILICATE BINDER COMPOSITIONS

Raymond D. George, and John Stevenson, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, United Kingdom

Filed Nov. 11, 1977, Ser. No. 850,643

Claims priority, application United Kingdom, Nov. 11, 1976, 47651/76; Mar. 2, 1977, 8852/77

Int. Cl.² C08L *3/02*

U.S. Cl. 106—80 **13 Claims**

1. A binder composition consisting essentially of an aqueous solution prepared by mixing in the absence of heating:

an alkali metal silicate,

a substantially water soluble carbohydrate selected from the group consisting of (1) glycans, (2) monosaccharides, (3) disaccharides and (4) stabilised carbohydrates having a reducing power which has been removed by hydrogenation, etherification, esterification, oxidation or by reaction with urea or urea derivative,

an oxyanion which forms a water soluble complex with the carbohydrate selected from the group consisting of oxyanions of boron, tin, germanium, tellurium or arsenic, and water.

13. A method of making an article of bonded particulate material, which method comprises mixing together in the absence of heating, the particulate material, an alkali metal silicate, a substantially water soluble carbohydrate selected from the group consisting of (1) glycans, (2) monosaccharides, (3) disaccharides and (4) stabilised carbohydrates having a reducing power which has been removed by hydrogenation, etherification, esterification, oxidation or by reaction with urea or urea derivative, an oxyanion which forms a water soluble complex with the carbohydrate selected from the group consisting of oxyanions of boron, tin, germanium, tellurium or arsenic, and water, forming the mixture to the desired shape, and hardening the shaped mixture.

4,194,919

METHOD FOR INCREASING FLEXURAL STRENGTH OF CEMENT COMPOSITIONS

Kenichi Hattori, Musashino; Shinji Iwai, Tokyo; Toshio Okuyama, Yokohama; Yuji Nakagawa, Chigasaki; Takeo Maeda, Kashiwa, and Yasuyuki Kawakatsu, Sakai, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1978, Ser. No. 891,302

Int. Cl.² C04B *7/35*

U.S. Cl. 106—90 **8 Claims**

1. A method for preparing a product made of hydraulic cement composition which product possesses increased flexural strength, which comprises the steps of: blending in a cementitious composition comprising hydraulic cement and an amount of water effective to harden said hydraulic cement, (1) from 5 to 30% by weight, based on the weight of said hydraulic cement, of water-soluble epoxy resin which is a polyglycidyl ether of a polyhydric alcohol selected from the group

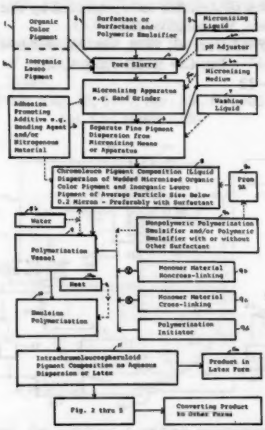
consisting of glycerin, diglycerin, polyglycerin, sorbitol, mannitol, trimethylol propane, pentaerythritol and polyethylene glycol, in which a part of the hydroxyl groups of said polyhydric alcohol is unreacted so that said polyglycidyl ether is water soluble, (2) from 1 to 1.5 moles, per epoxy equivalent of said water-soluble epoxy resin, of polyalkylene polyamine effective as a curing agent for said water-soluble epoxy resin, and (3) from 0.1 to 10% by weight, based on the weight of said hydraulic cement, of cement dispersant having a water reduction ratio of at least 20%; and then hardening the composition.

4,194,920

INTRACHROMOLEUCOSPHERULOID PIGMENT COMPOSITIONS AND PROCESSES FOR PRODUCING SAME

Oliver W. Burke, Jr., deceased, late of Fort Lauderdale, Fla. (by Norma Scala, administratrix), and Victor T. Humphreys, Pompano Beach, Fla., assignors to Marion Darrah and Joseph Y., co-trustees Houghton, both of Pompano Beach, Fla.

Division of Ser. No. 712,253, Aug. 6, 1976, Pat. No. 4,154,621.
This application Feb. 15, 1979, Ser. No. 12,606
Int. Cl.[2] C08K *9/02, 9/04, 9/10*
U.S. Cl. 106—308 M **31 Claims**


Organic Color Pigment
Inorganic Leuco Pigment
Surfactant or Surfactant and Polymeric Emulsifier
Micronizing Liquid
pH Adjustor
Micronizing Medium
Washing Liquid
Micronizing Apparatus e.g. Sand Grinder
Adhesion Promoting Additive e.g. Bonding Agent and/or Nitrogenous Material
Separate Fine Pigment Dispersion from Micronizing Means or Apparatus
Chromoleuco Pigment Composition (Liquid) Dispersion of Wedded Micronized Organic Color Pigment and Inorganic Leuco Pigment of Average Particle Size Below 0.2 Micron - Preferably with Surfactant
From 3A
Water
Polymerization Vessel
Heat
Emulsion Polymerization
Monopolymeric Polymerization Emulsifier and/or Polymeric Emulsifier with or without Other Surfactant
Monomer Material Noncross-linking
Monomer Material Cross-linking
Polymerization Initiator
Intrachromoleucospheruloid Pigment Composition as Aqueous Dispersion or Latex
Product in Latex Form
Fig. 2 thru 5
Converting Product to Other Forms

1. A process for producing intrachromoleucospheruloid pigment composition for combination with a designated vehicle, which process comprises, in combination:

(I)

(a) providing in liquid medium a composite chromoleuco pigment composition consisting essentially of particles of organic color pigment composition wedded to particles of inorganic leuco pigment composition, said composite pigment composition being dispersed in said medium with the aid of 0–100% by weight of the total of surface active agent material set forth in (c), said composite pigment composition being essentially insoluble in the liquid and having primary particles of an average size less than 0.2 micron in diameter,

(b) forming an aqueous emulsion polymerization system consisting essentially of (1) the composition of (a), (2) the balance, if any, of 100% of the total surface active agent material set forth in (c) and (3) monomer material selected in the ratio of said monomer material to said pigment composition lying in the range of 100:1 to 1:20 by weight, said monomer material consisting essentially of ethylenically unsaturated monomer material selected as set forth in step (II), said composite pigment composition containing, based on the inorganic pigment therein, from 0 to an equal weight of pigment bonding agent material and from 0 to an equal weight of nitrogenous material, and (4) emulsion polymerization initiator in an effective amount in the range of 0.2 to 10% by weight of the said monomer material,

(c) the ratio of the total of the surface active agent material present after (b) to said composite pigment composition and monomer material lying in the range of 2:1 to 1:40 by weight, and said total of surface active agent material being selected from the class of polymeric and nonpolymeric surface active agents and combinations thereof capable of effecting emulsion polymerization of the selected ethylenically unsaturated monomer material to yield polymer particles with the pigment provided in step (a) imbedded therein

(d) effecting emulsion polymerization of the combination formed in (b) under agitation and at sufficient temperatures in the range of 0°to 200° C. for sufficient time in the range of a few minutes to 24 hours to permit the polymerization to proceed far enough to effect from 50 to 100% conversion by weight of said monomer material to produce in aqueous dispersion an intrachromoleucospheruloid pigment composition consisting essentially of spheruloids of organic polymer material having primary particles of an average size not exceeding 4 microns in diameter, and having imbedded therein the still smaller size particles of said composite pigment composition; and

(e) recovering said intrachromoleucospheruloid pigment composition;

(II) the monomer material referred to in step (b) being selected, from the class consisting of (i) monomer material containing and polymerizable through a single ethylenically unsaturated group and (ii) monomer material containing and polymerizable through a plurality of ethylenically unsaturated groups, for forming polymer spheruloids of different refractive index from the pigment particles and of different refractive index from the designated vehicle; and

(III) said designated vehicle being a non-solvent for said recovered pigment composition and being selected from the class consisting of water-based and oil-based vehicles.

4,194,921

PIGMENT COMPOSITIONS AND PROCESS FOR DUST FREE PIGMENT BEADS

Ian R. Wheeler, Houston, and George H. Robertson, Paisley, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

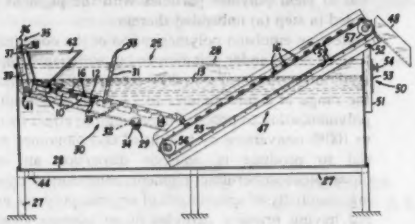
Filed Jun. 16, 1978, Ser. No. 916,169
Claims priority, application United Kingdom, Jun. 24, 1977, 26520/77
Int. Cl.[2] C09C *3/08, 3/10*
U.S. Cl. 106—309 **9 Claims**

1. A process for the manufacture of substantially dust free meterable and readily dispersible beads of a pigment composition which comprises contacting with agitation a suspension of a finely divided pigment or pigment composition in a mixture of water and an oxygenated aliphatic hydrocarbon solvent containing from 1 to 5 carbon atoms and having appreciable solubility in water, together with a solution of a carrier which is substantially water insoluble and soluble in the respective solvent at reflux temperature and then distilling off the solvent and recovering the resultant beads by filtration from the aqueous phase.

4,194,922
METHOD AND APPARATUS FOR ULTRASONIC CLEANING OF COMPONENT PARTS

Åke Granseli; Sven A. Jansson, and Malte Sporrong, all of Nynashämn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Apr. 17, 1978, Ser. No. 897,018
Claims priority, application Sweden, Apr. 18, 1977, 7704420
Int. Cl.[2] B08B 3/12
U.S. Cl. 134—1 22 Claims

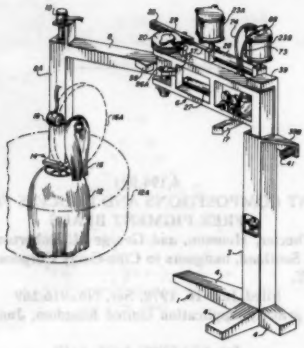


1. The method of cleaning articles including the steps of:
(a) placing the articles in mechanical contact with a flat plate member disposed in a liquid bath,
(b) applying ultrasonic vibratory energy to the articles from the member by energizing an ultrasonic transducer in direct mechanical contact with the plate, and
(c) conveying the articles in the bath during their mechanical contact with the member and during the application of the vibratory energy.

4,194,923
CAR WASHING METHOD AND APPARATUS

Archie L. Johnson, 3801 W. Orangewood, Phoenix, Ariz. 85021

Filed Jul. 14, 1978, Ser. No. 924,797
Int. Cl.[2] B08B 7/00
U.S. Cl. 134—6 18 Claims

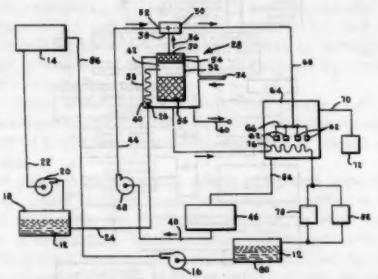


13. A method for scrubbing portions of the front, side, and rear surfaces of a vehicle as the vehicle advances in a forward direction through a car wash installation which includes
i. a primary arm pivotally mounted on a support for rotation between an initial forward position and a rearward position, said primary arm having a directional component in said forward direction when said primary arm is in said initial forward position, said primary arm being directed generally in the direction opposite to said forward direction when said primary arm is in said rearward position,
ii. a secondary arm pivotally mounted on the primary arm,
iii. a rotary brush mounted on the outer arm for scrubbing the surface of the vehicle, said method comprising the steps of:
(a) sequentially applying control forces to a plurality of distributed force transmission points which are engageable with respective ones of a plurality of distributed circumferential force receiving points of a torque element connected to the outer arm, thereby producing a controllable torque on the secondary arm and a corresponding crush pressure between the rotary brush and surfaces of the vehicle;
(b) rotating the primary arm from said initial forward position toward said rearward position as the rotary brush passes along the side surface of the vehicle; and
(c) rotating the primary arm from said rearward position toward said forward position as the rotary brush passes along the rear surface of the vehicle, thereby producing a crush pressure between the rotary brush and the rear surface of the vehicle.

4,194,924
PROCESS FOR RECLAIMING AIRCRAFT FUEL TANK PURGING FLUIDS

John W. Safranko, Carmichael; Craig R. Burnett, Folsom, and James E. Kilburn, Roseville, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 13, 1978, Ser. No. 968,894
Int. Cl.[2] B08B 7/04, 9/08
U.S. Cl. 134—12 3 Claims



1. A continuous method for reclaiming and regenerating the individual components of a fuel contaminated, composite, liquid purging mixture which comprises the steps of:
a. introducing a high flash point hydrocarbon purging liquid into an aircraft fuel tank containing residual amounts of a low flash point hydrocarbon jet fuel to form a fuel-contaminated purging fluid;
b. passing said contaminated purging fluid through a colled conduit in the heated jacket section of a flash distillation still while simultaneously pre-heating said fluid to partially vaporize a portion of the said fluid;
c. evacuating the inner shell portion of said distillation still by means of a water-powered aspirator to create a vacuum in said shell portion;
d. heating said contaminated purging fluid while passing through the coil within the jacket of the still and passing the vapor laden portions of said fluid upwardly into said evacuated shell portion;
e. maintaining controlled conditions of pressure and temperature within said shell portion sufficiently to flash vaporize the highly volatile, low flash point, hydrocarbon fuel component;
f. passing the flash vaporized component upwardly through a ceramic saddle packing to demist said flash vaporized component and remove any entrained non-volatile components;

g. drawing the demisted vapors upwardly into a water-powered aspirator to cool, condense and compress said vapors into a liquid phase that is suspended in water;

h. passing said liquid phase emulsified in water through a manifold of coalescing filters arranged within a water-oil separator to separate the low flash point liquid fuel component into a separate, distinct, oily layer floating on the top surface of a water layer;

i. discharging and passing said fuel component into a storage reservoir while simultaneously recycling and passing said water to said water-operated aspirator for re-use; and

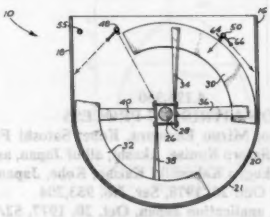
j. passing the relatively, non-volatile, high flash point, hydrocarbon purging fluid remaining in the bottom portion of said distillation still through a ceramic saddle packing to fractionate off as vapor any dissolved volatile hydrocarbons and then to pass the hot reclaimed purging fluid through the bottom of the still and into a coiled conduit which passes through said oil-water separator for cooling said purging fluid before alternately passing separate portions of said purging fluid into vacuum operated receiving tanks for subsequent introduction into a common storage reservoir.

4,194,925

METHOD AND APPARATUS FOR WASHING MIXING CONTAINERS

Fred D. Holbrook, Statesville, and Perry Holbrook, Thomasville, both of N.C., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Aug. 15, 1977, Ser. No. 824,700
Int. Cl.[2] B08B 9/00
U.S. Cl. 134—24 **8 Claims**



1. Apparatus for washing a mixing container having side walls, an open top, a bottom portion provided with a dump gate and internal mixing components including a blade mounted on a power-driven rotatable shaft comprising:

fluid dispensing means including at least a pair of spaced-apart conduits mounted adjacent an upper portion of the container communicating with said pump means, said conduits including a plurality of spray outlets arranged at predetermined locations therealong, preselected ones of said outlets being provided with tubular means selectively positionable relative to an associated conduit for directing fluid in predetermined directions against the mixing components and interior wall faces of the container.

6. A method for supplying fluid to a material mixing container having side walls, an open top, a bottom portion provided with a dump gate and internal mixing components including a blade mounted on a power-driven rotatable shaft for purposes of washing and mixing comprising:

introducing a predetermined amount of fluid into the container for direction against the internal mixing components and interior wall faces of the container for purposes of washing;

retaining a predetermined amount of said introduced fluid within the container; and

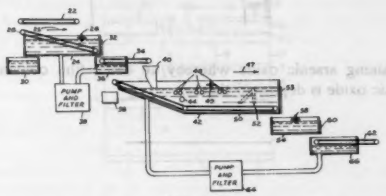
adding a predetermined amount of additional fluid until a preselected total amount of fluid is contained within the container.

4,194,926

APPARATUS AND METHOD FOR SELECTIVELY RECLAIMING PARTS FROM FILM CARTRIDGES

Clive D. Barnsbee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 844,950, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 701,925, Jul. 2, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,509
Int. Cl.[2] B08B 3/10
U.S. Cl. 134—29 **10 Claims**



1. In a method for separating materials of different specific gravities wherein the materials are added to a tank containing a fluid of predetermined specific gravity so that materials having specific gravities higher than or lower than said predetermined specific gravity sink or float respectively, the improvement wherein said fluid is boiled in a localized region within said tank to produce a turbulent region of fluid in which materials are physically separated even though they tend to cling together and in which air entrapped by said materials is removed, thereby enabling the materials to be separated on the basis of their specific gravities in a less turbulent region of said tank.

2. A method for separating materials having different specific gravities wherein at least some of said materials are of a geometry that causes them to tend to float, and wherein at least some of said materials are affixed together by an adhesive, said method comprising the steps of:

adding the materials to a tank containing a detergent fluid of predetermined specific gravity that is capable of dissolving said adhesive, said tank including a ramp member disposed within said tank so as to be submerged beneath said detergent fluid; and

boiling said detergent fluid in a localized region within said tank to produce a turbulent region of fluid in said tank separated by said ramp member from a relatively calm region of fluid,

whereby said turbulence facilitates sinking of those materials having a higher specific gravity than said detergent fluid but which are of a geometry that causes them to tend to float, said detergent fluid dissolves said adhesive permitting affixed materials to be separated, and said calm region of fluid further facilitates separation of said materials on the basis of specific gravity.

4,194,927

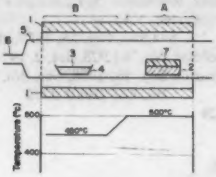
SELECTIVE THERMAL OXIDATION OF AS-CONTAINING COMPOUND SEMICONDUCTOR REGIONS

Hiromitsu Takagi, Muko; Gota Kano, Nagaokakyo, and Iwao Teramoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 11, 1978, Ser. No. 923,689
Claims priority, application Japan, Jul. 15, 1977, 52-85228; Jul. 18, 1977, 52-86383; Feb. 24, 1978, 53-21399
Int. Cl.[2] H01L 7/36, 7/44
U.S. Cl. 148—1.5 **25 Claims**

1. A method of making a semiconductor device including at

least a compound of arsenic in a portion thereof, said method comprising heat treating said semiconductor device in a vapor



containing arsenic oxide whereby an oxide film containing arsenic oxide is deposited thereon.

4,194,928

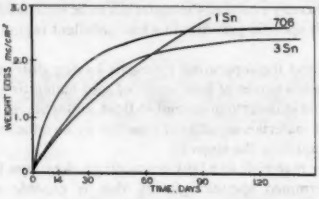
CORROSION RESISTANT COPPER BASE ALLOYS FOR HEAT EXCHANGER TUBE

James M. Popplewell, Guilford; Constance F. Acton, Wallingford, and Andrew J. Brock, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 879,135, Feb. 21, 1978, Pat. No. 4,169,729. This application Dec. 18, 1978, Ser. No. 970,289

Int. Cl.[2] C22C 9/06; C22F 1/08

U.S. Cl. 148—2 **10 Claims**



1. A process of producing a wrought copper base alloy which is particularly useful in applications requiring corrosion resistance, said process comprising the steps of:

(a) providing a cast alloy consisting essentially of 4.0 to 6.0% by weight nickel, 2.0 to 3.0% by weight aluminum, 1.0 to 3.0% by weight tin, 0.1 to 0.5% by weight manganese, balance copper;

(b) homogenizing said alloy at a minimum temperature of 500° C. for at least 15 minutes;

(c) hot working said alloy at a temperature of at least 400° C.;

(d) rapidly cooling the hot worked alloy to insure a solid solution microstructure within the alloy; and

(e) cold working said alloy at a temperature below 200° C.

3. A process of producing a wrought copper base alloy which is particularly useful in applications requiring corrosion resistance, said process comprising the steps of:

(a) providing a cast alloy consisting essentially of 3.0 to 7.5% by weight nickel, 0.5 to 4.0% by weight tin, up to 4.0% by weight aluminum, 0.001 to 1.0% by weight manganese, balance copper;

(b) homogenizing said alloy at a minimum temperature of 500° C. for at least 15 minutes;

(c) hot working said alloy with a finishing temperature of at least 400° C.;

(d) rapidly cooling the hot worked alloy from said finishing temperature to provide a single phase solid solution microstructure within the alloy; and

(e) cold working said alloy at a temperature below 200° C.

4,194,929

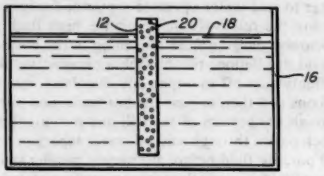
TECHNIQUE FOR PASSIVATING STAINLESS STEEL

Joseph T. Menke, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 8, 1978, Ser. No. 940,545

Int. Cl.[2] C23F 7/10

U.S. Cl. 148—6.15 R **3 Claims**



1. A method of passivating stainless steel comprising the steps of:

a. Making the stainless steel cathodic by first embedding ferrous metal abrasive anode particles on the surface thereof, and

b. Subjecting said stainless steel to a phosphating conversion coating solution.

4,194,930

ION-NITRIDING PROCESS

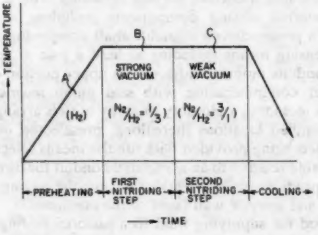
Akio Tanaka, Ono; Mizuo Edamura, Kobe; Satoshi Furuitsu, Kakogawa, and Satoru Kunise, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 20, 1978, Ser. No. 953,204

Claims priority, application Japan, Oct. 20, 1977, 52/126605

Int. Cl.[2] C23C 11/16

U.S. Cl. 148—16.6 **13 Claims**



1. In an ion-nitriding process including the steps of subjecting a workpiece having at least one aperture to a DC voltage in an atmosphere of nitrogen-containing gas so as to produce a glow discharge on the workpiece, the improvement comprising a first nitriding step which is carried out under a vacuum which is strong enough to suppress arc discharge on the workpiece, and a second nitriding step which is carried out under a vacuum which is weak as compared with the vacuum in the first nitriding step, so that glow discharge is produced even in the aperture of the workpiece.

4,194,931
SOLDERING FLUX

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to Western Electric Co., New York, N.Y.

Division of Ser. No. 846,464, Oct. 28, 1977, which is a continuation-in-part of Ser. No. 797,715, May 16, 1977, abandoned. This application Nov. 2, 1978, Ser. No. 956,945
Int. Cl.[2] B23K *35/34*
U.S. Cl. 148—25 16 Claims

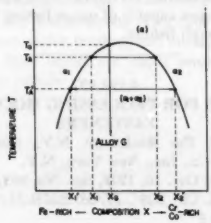
1. A method of soldering a metal which comprises:

applying to a surface a soldering flux comprising a rosin mixture of (a) rosin; (b) an activator having at least one halogen atom and at least one destabilizing substituent; and (c) a surfactant selected from the group consisting of (a″) a polycarboxylic acid, (b″) a hydroxyl substituent of (a″), (c″) a keto acid and (d″) a mixture of any of the foregoing surfactants, to form a flux treated surface.

4,194,932
FE/CR/CO PERMANENT MAGNETIC ALLOYS AND METHOD OF PRODUCTION THEREOF

Masao Iwata, Chichibu, Japan, assignor to Hitachi Metals, Japan

Filed Feb. 7, 1978, Ser. No. 875,791
Claims priority, application Japan, Feb. 10, 1977, 52-12979
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—102 14 Claims



1. A method of producing a Fe/Cr/Co permanent magnet alloy consisting essentially of 17 to 45% by weight chromium, 3.0 to 14.9% by weight cobalt and the remainder being iron, by subjecting the alloy to a two-step aging treatment, whereby a two-phase structure of the alloy is precipitated, which two-step aging treatment comprises:

a step of primary aging treatment of heating the alloy to a temperature within the range of 590° to 670° C. and maintaining the alloy at said temperature in a controlled magnetic field, whereby said two-phase structure is formed, with the anisotropy in one of the two phases being oriented along the direction of the applied magnetic field;

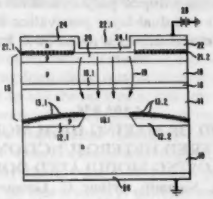
cooling the alloy at a sufficiently rapid cooling rate, down to a temperature lower than that temperature predetermined for starting subsequent secondary aging treatment, such that further precipitation of two-phase structure of the alloy is substantially prevented from taking place; and

a secondary aging treatment of heating the alloy to a temperature predetermined for starting which is lower at least by 10° C. than the temperature in the primary aging treatment and then subjecting the alloy to a slow and continuous cooling at a rate of temperature decrement of 100° C. over 2 to 50 hours down to a temperature lower than 560° C., thereby to widen the composition difference between the previously separated two phases due to said primary aging treatment.

4,194,933
METHOD FOR FABRICATING JUNCTION LASERS HAVING LATERAL CURRENT CONFINEMENT

Ralph A. Logan, Morristown, and Won-Tien Tsang, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 794,466, May 6, 1977, Pat. No. 4,169,997.
This application May 17, 1979, Ser. No. 39,862
Int. Cl.[2] H01L *21/208*
U.S. Cl. 148—171 9 Claims



1. A method of fabricating a stripe geometry junction laser comprising the steps of:

(a) forming a mesa on a major surface of a monocrystalline semiconductor body of one conductivity type,

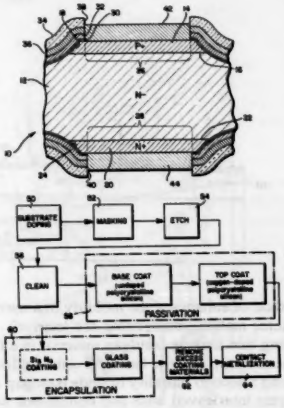
(b) growing simultaneously a pair of laterally spaced epitaxial layers of the opposite conductivity type on said major surface and contiguous with the side walls of said mesa by means of a liquid phase epitaxial process in which growth nucleation on the top of said mesa is inhibited, and

(c) growing a laser structure on said spaced layers and the top of said mesa so that a first pair of laterally spaced blocking p-n junctions separated by said mesa are formed at the interface with said pair of layers.

4,194,934
METHOD OF PASSIVATING A SEMICONDUCTOR DEVICE UTILIZING DUAL POLYCRYSTALLINE LAYERS

Theodore A. Blaske, Plano, and Ho Y. Yu, Richardson, both of Tex., assignors to Varo Semiconductor, Inc., Garland, Tex.

Division of Ser. No. 799,467, May 23, 1977, Pat. No. 4,161,744.
This application Apr. 10, 1979, Ser. No. 28,836
Int. Cl.[2] H01L *21/205, 29/04*
U.S. Cl. 148—174 3 Claims



1. The method of making semiconductor devices which is characterized by the steps of: infusing a selected portion of the surface of a semiconductor body of monocrystalline substrate material with dopant material to form a diffusion layer having

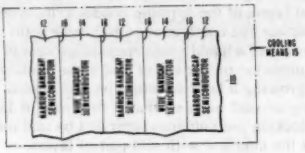
a boundary region with the parent substrate material, which boundary region acts as a semiconductor junction; preparing the junction region of said body to receive a passivation coating; exposing said prepared semiconductor body to an atmosphere consisting essentially of an inert gas and a silane material at a selected, elevated temperature whereby to deposit a base layer of essentially undoped polycrystalline silicon over the region of said junction region; and thereafter introducing a gaseous oxygen donor into said atmosphere in continuation of the presence of inert gas and silane material whereby to deposit a top layer of oxygen-doped polycrystalline silicon over said base layer and form a dual-layer passivation coating, wherein said top layer contains less than about 30% by weight of oxygen.

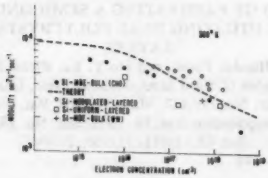
4,194,935

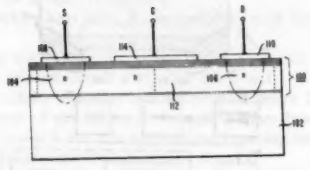
METHOD OF MAKING HIGH MOBILITY MULTILAYERED HETEROJUNCTION DEVICES EMPLOYING MODULATED DOPING

Raymond Dingle, Summit; Arthur C. Gossard, Warren, and Horst L. Störmer, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 899,402, Apr. 24, 1978, Pat. No. 4,163,237.
This application Apr. 2, 1979, Ser. No. 26,090
Int. Cl.[2] H01L *21/203, 29/06*
U.S. Cl. 148—175 **5 Claims**







1. A method of enhancing the mobility of a narrow bandgap semiconductor material comprising the steps of:

(a) forming said narrow bandgap material in a first plurality of spaced apart, narrow bandgap semiconductor layers,

(b) forming a second plurality of wide bandgap semiconductor layers interleaved with and contiguous with said first plurality, and

(c) forming said wide bandgap layers from a material which (i) is substantially lattice-matched to that of said narrow bandgap layers, (ii) forms a conductor or valence band step at the interfaces with said narrow bandgap layers of sufficient magnitude to confine carriers, and (iii) is doped such that the impurity-concentration-thickness product thereof exceeds that of said narrow bandgap layers.

4,194,936

METHOD OF MAKING A FISHING LINE INDICATOR

Leon L. Martuch, Orlando, Fla., assignor to JFL Development Company, Orlando, Fla.

Filed Aug. 21, 1978, Ser. No. 935,254
Int. Cl.[2] B32B *33/00, 27/32;* **C09K** *11/00*
U.S. Cl. 156—67 **8 Claims**

1. A method of making fishing line indicators capable of being used in artificial nymph fishing comprising the steps of:

forming a sheet of foamed polymer material with a plurality of predetermined shapes on one side thereof;

applying an adhesive to the other side of said foamed polymer material;

applying a protective covering over said adhesive on the other side of said foamed polymer material;

applying a fluorescent material to the one side of said foamed polymer material having predetermined shapes thereon; and

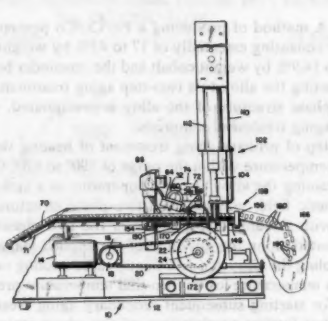
cutting said sheet of foam polymer material having said adhesive and coating thereon to form a plurality of predetermined shapes capable of use as fishing line indicators in artificial nymph fishing.

4,194,937

APPARATUS FOR PROCESSING HOOK AND EYE FASTENERS

Frank Hashmall, Far Rockaway, N.Y., assignor to L. M. Rabinowitz & Co., Inc., New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,986
Int. Cl.[2] B29C *27/08;* **B32B** *31/00*
U.S. Cl. 156—73.1 **10 Claims**



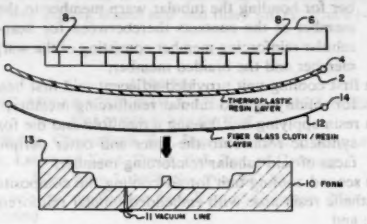
9. A process for providing hook and eye fastener tapes comprising the steps of incrementally advancing a cloth tape having hook or eye fasteners attached thereon along a base to a sealing station and then to a cutting station, forming at said sealing station a spaced double row of heat sealed stitches on said tape between said hookes or eyes, with each row comprising a line of spaced heat sealed stitches, and cutting said cloth tapes between said double row of heat sealed stitches at said cutting station, thereby providing cloth tape sections having edges sealed by respective lines of spaced heat sealed stitches.

4,194,938

PRESTRESSED ARTICLE

Irving E. Figge, and Edward H. Dean, both of Newport News, Va., assignors to The United States of America as represented by the Secretary of the Army, Alexandria, Va.

Filed May 15, 1978, Ser. No. 906,186
Int. Cl.[2] B29C *17/04;* B32B *1/02*
U.S. Cl. 156—212 2 Claims



1. A method for forming a prestressed plastic article by thermoforming, the process wherein a sheet of a thermoplastic resin is forced over a mold, said method including heating a thermoplastic sheet and a thermosetting resin-impregnated sheet of fiber-reinforced weft under conditions such that the thermoplastic layer would normally follow the mold, superimposing the soft thermoplastic sheet on the thermosetting resin layer, forcing the thermoplastic layer and thereby the thermosetting layer throughout the mold thus putting the thermosetting layer under tension, cooling the thermoplastic layer during the curing of the thermosetting layer thus also putting the thermoplastic layer under tension, and curing the thermosetting resin while both layers are under tension to form the prestressed plastic article.

4,194,939

METHOD OF MAKING LAYERED FABRICS

Glen D. Perry, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 667,002, Mar. 15, 1976, Pat. No. 4,142,016, which is a continuation-in-part of Ser. No. 555,006, Mar. 3, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 848,552
Int. Cl.[2] B32B *31/18;* C09J *5/06*
U.S. Cl. 156—254 5 Claims

1. A process which comprises disposing between two essentially parallel reinforcing layers of textile-length fibers a layer of bulk fibers essentially randomly oriented in the plane parallel to said reinforcing layers, said layer of bulk fibers having essentially no fiber lengths exceeding 10 mm, and said layer of bulk fibers comprising at least about 16 g/m^2 of said bulk fibers, distributing a settable bonding agent essentially throughout the resulting multi-layered structure, subjecting said structure to heating applied to the surfaces thereof and controlled so as to lower substantially the concentrations of said bonding agent in relation to the fibers in a two-dimensional continuum disposed in said layer of bulk fibers in a direction generally parallel to said reinforcing layers, setting the bonding agent in the heated structure to bind together said reinforcing layers and said layer of bulk fibers and then splitting said structure by drawing said reinforcing layers in divergent directions with sufficient force to split said layer of bulk fibers along said continuum.

4,194,940

METHOD OF BONDING EMPLOYING AN ADHESIVE COMPOSITION CONTAINING POLYISOCYANATE REACTION PRODUCTS HAVING AN AVAILABLE ISOCYANATE CONTENT OF NOT MORE THAN 0.5 PERCENT

Dennis J. Damico, and Brian Martin, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Continuation of Ser. No. 738,414, Nov. 3, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 930,962
Int. Cl.[2] B32B *31/00;* C09J *3/00;* D02G *3/00*
U.S. Cl. 156—331 12 Claims

1. A method of bonding a segmented copolyester thermoplastic elastomer composition consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages and a flexible or nonflexible substrate which comprises applying to at least one of said segmented copolyester elastomer or said substrate an adhesive lacquer system comprising organic solvent-carried thermoplastic polyetherurethane, said polyetherurethane having substantially no free hydroxyl moieties and a residual free isocyanate content of no greater than 0.5 percent, said polyurethane being obtained by forming an isocyanate-functional intermediate by reacting an excess of at least one polyisocyanate having at least two isocyanate groups with at least one polyether polyol having at least two hydroxyl groups in an adhesive solvent system until at least about 90 percent of said hydroxy groups have reacted with said isocyanate groups, reacting said isocyanate-functional intermediate in said adhesive solvent system with not more than a stoichiometric amount of at least one difunctional chain extending reagent to a viscosity endpoint corresponding to a molecular weight in the range from about 20,000 to about 200,000 at a residual free isocyanate content not exceeding 0.5 percent by weight based on weight of said polyurethane, and terminating such reaction;

contacting said elastomer and said substrate; and

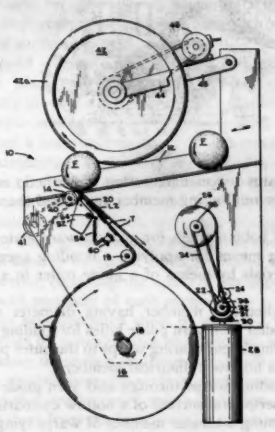
maintaining such contact at a temperature and pressure and for a time sufficient to effect curing of said thermoplastic polyurethane adhesive system.

4,194,941

LABELLING MACHINE

Peter D. Briggs, San Jose, Calif., and Dennis R. Sharkey, Tabik, South Africa, assignors to FMC Corporation, San Jose, Calif.

Filed Jul. 22, 1974, Ser. No. 490,824
Int. Cl.[2] B65C *9/04, 9/32, 9/42*
U.S. Cl. 156—361 7 Claims



5. A labelling machine comprising an article supporting runway having a flat surface for supporting generally round

articles for rotational movement thereover, said surface having an opening therein, a tape support member mounted within said machine so that an edge thereof extends below and directly adjacent to said opening, means for mounting a tape having uniformly spaced labels thereon for movement along a path within said machine, said path extending around said edge of said tape support member so that said edge serves to successively separate said labels from said tape by forcing said labels to follow a secondary path which diverges from said tape path and extends through said opening into the path of said rollable articles, drive means for moving said tape along its said path, means for sensing the presence of an article on said surface, and means connected to said sensing means for starting and stopping said drive means so that each article rolling on said surface will receive a label which has been projected through said opening and cause it to partially adhere thereto, a roller mounted below said surface adjacent said opening in spaced relation to said projected label and downstream thereof for engaging an article moving along said surface and the label partially adhering to said article, means resiliently engaging each article from above as the article passes over said opening to press said article against said roller, and means for rotating said roller at a speed so that the direction of rotation of the article on the surface is reversed in order to roll the label onto the article.

4,194,942

APPARATUS FOR MANUFACTURING SYNTHETIC RESIN HOSE HAVING A REINFORCING MEMBER EMBEDDED THEREIN

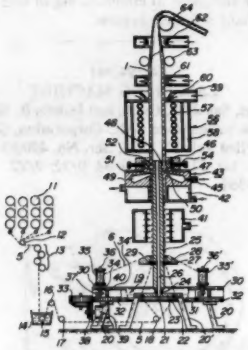
Kenichi Tanaka, Musashino, Japan, assignor to Kakuichi Co. Ltd., Nagano, Japan

Filed May 4, 1978, Ser. No. 902,825

Claims priority, application Japan, Oct. 15, 1977, 52-122967

Int. Cl.[2] B29D *23/05*

U.S. Cl. 156—433 **2 Claims**



1. An apparatus for manufacturing a synthetic resin hose having a tubular reinforcing member embedded therein, comprising:

a plurality of bobbin creels for guiding warp material;

warp treating means for applying a bonding agent to said warp materials by means of a guide roller in a bonding agent tub;

a hollow cylindrical member having diameter adjusting discs provided with yarn guide holes for guiding a plurality of bonding agent bearing warps to the outer peripheral surface of a hollow cylindrical member;

means for guiding warps through said yarn guide holes to the outer peripheral surface of a hollow cylindrical member for forming a tubular member of warps lying parallel to each other parallel to the axis of the tubular member;

a braiding machine surrounding said hollow cylindrical member for weaving braiding yarns into a braided member on the outer periphery of said tubular warp member formed by a plurality of warps guided to the outer peripheral surface of the hollow cylindrical member and mutually aligned in parallel relation to the tubular member;

means for weaving a plurality of braiding yarns into a braid member consecutively in overlying relation around the outer peripheral surface of said warp tubular member thereby preparing a tubular reinforcing member;

a first heating unit surrounding said hollow cylindrical member for bonding the tubular warp member to the braided member at the contacts therebetween for heat-setting a tubular reinforcing member consisting of the warp tubular member and the braided member;

a first cooling unit provided adjacent said first heating unit for solidifying said tubular reinforcing member;

a resin applying unit having a manifold and die for coating synthetic resin onto the inner and outer peripheral surfaces of said tubular reinforcing member;

a second cooling unit for air-cooling the composite tubular synthetic resin hose with embedded tubular reinforcing member; and

means for taking up said synthetic resin hose to a winding-up reel under a constant tension;

wherein said hollow cylindrical member has a tapered portion surrounded by the first heating unit for ensuring the smooth upward movement of said tubular reinforcing member along the outer peripheral surface of the hollow cylindrical member, the degree of taper being relating to the thermal shrinkage percentage of the braiding yarns used; and

said member, said machine, said means and said units are arranged in the order described successively from one end of the hollow cylindrical member to said winding-up reel.

4,194,943

MODIFIED WARP KNITTING MACHINE FOR THE PRODUCTION OF NETTING BY HEAT SEALED WEFT INSERTION

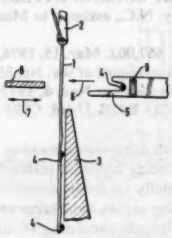
Karl Kohl, Obertschausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinen Fabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,386

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2706930

Int. Cl.[2] D04H *3/04, 3/14*

U.S. Cl. 156—441 **4 Claims**



1. In a warp knitting machine for the manufacture of netting from heat sealable fibers having at least one guide bar with a plurality of guides affixed thereon for guiding the warp threads, a weft inserter means, a plurality of inlay sinkers, each of said sinkers having a mouth portion for carrying weft threads, a needle bar, and power drive means, the improvement comprising:

(a) heat sealing means affixed on said needle bar, said needle bar being operatively coupled to said power source for reciprocal movement towards and away from said inlay sinkers;

(b) said inlay sinkers being operatively coupled to said power source for reciprocal movement towards and away from said heat sealing means for cooperating therewith, said sinker mouth portion cooperating with said weft inserter means by receiving said weft threads and carrying said threads towards said heat sealing means; and

(c) said guide bars being operatively coupled to said power source for guiding said warp threads, via said guides, into mutual contact with said weft threads, said threads being sealed to each other to form netting upon mutual contact with said heating means and said inlay sinker mouth portion.

4,194,944

FEEDING APPARATUS FOR A FILM IN A HOT PRESS STAMPING MACHINE

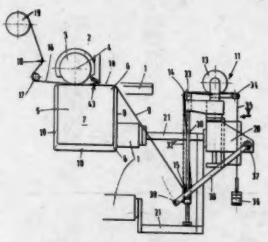
Wilfried Spätle, Oberasbach, Fed. Rep. of Germany, assignor to Messrs. Leonhard Kurz, Furth, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,252

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721980

Int. Cl.[2] B44C *1/00*

U.S. Cl. 156—540 **11 Claims**



1. A feeding apparatus for application of foil in a hot press stamping machine having a hot press stamping roller at a substantially fixed location and carrier means adapted to support an article to be decorated with said foil and which is displaceable with respect to said stamping roller, comprising a supply reel for feeding said foil mounted on a backing sheet, at least one direction changing roller between said supply reel and said stamping roller and over which said foil is passed, a take up reel for receiving and collecting the backing sheet after passing the stamping roller, said supply reel being axially displaceable substantially parallel to said stamping roller, and between said supply reel and stamping roller before application to a face of said article to be decorated, sand foil is led over a jockey roller which is moveable with said supply reel, is displaceable substantially parallel to itself to tension said foil, and is rotatably mounted about an axis extending transversely to its rotary axis in the direction of displacement.

4,194,945

FILTERING MATERIAL AND PROCESS FOR PRODUCING SAME

Oleg A. Malev, Institutsky prospekt, 9, kv. 55; Idel N. Khalandovsky, Vitebsky prospekt, 53, korpus 3, kv. 106; Moisei R. Kagan, ulitsa Kostjushko, 58, kv. 44; Evgeny Y. Pechko, Krasnoe Selo, Fabrichny Poselok, 4, kv. 7; Lev N. Laptev, Institutsky prospekt, 9, kv. 30, all of Leningrad; Semen S. Vaikhansky, Narodnava ulitsa, 4, Tsjurupinsk Khersonskoi oblasti; Anatoly I. Khorunzhy, Industrialnaya ulitsa, 2, Livny Orlovskoi oblasti, and Valery K. Afanasiev, Borodinskaya ulitsa, 1/88, kv. 13, Leningrad, all of U.S.S.R.

Filed Dec. 27, 1977, Ser. No. 864,436

Int. Cl.[2] D21F *11/14*

U.S. Cl. 162—135 **2 Claims**

1. A process for producing a porous filtering material formed of fibrous stock at least a portion of which comprises cellulose-based fibrous stock, comprising the steps of: preliminarily shredding the cellulose based fibrous stock; refining a portion of said preshredded cellulose based fibrous stock in an air medium, at a concentration of at least 80% BD, such that the average length of the cellulose-based fibrous stock is in the range of from 0.3 to 2.5 mm; dispersing the refined portion of the cellulose-based fibrous stock in an aqueous medium to obtain a uniform fibrous suspension with a concentration of 1.5 to 6%; refining the remaining portion of the fibrous stock in an aqueous medium at a concentration of 1.5 to 40.0% BD to 15° to 60° SR whereafter both portions are intermixed to form a suspension; introducing additional fiber stock additives and water-repellant agents into the resulting suspension to formulate a furnish from said suspension and said additives and agents; forming a sheet from said furnish; pressing said sheet and drying the same, whereby a filtering material is produced having pores, 60 to 85% by volume of which have diameters which are within 5 microns of each other and are in the range of from 5 to 40 microns.

4,194,946

PROCESS FOR CONTINUOUSLY PREPARING FIBER REINFORCED CEMENT

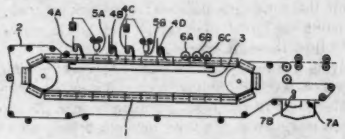
Toshihiro Ootani, Osaka; Mikio Kozuka; Ryuichiro Takeda, both of Yokohama, and Hideaki Kurihara, Kawasaki, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo and Nakashima Manufacturing Company, Ltd., Osaka, both of, Japan

Filed Sep. 27, 1977, Ser. No. 837,223

Claims priority, application Japan, Oct. 28, 1976, 51/128804

Int. Cl.[2] D21F *11/04*

U.S. Cl. 162—156 **9 Claims**



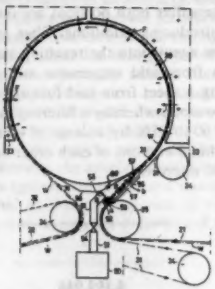
1. A process for continuously preparing a fiber reinforced cement, which comprises: forming a conveyer by connecting a plurality of suction boxes each having a perforated plate and each equipped with side wall members projecting above said perforated plate and continuously moving said conveyor; continuously moving a filter cloth at a synchronous speed with said conveyor into contact with said perforated plates immediately before a cementitious slurry is deposited on said filter cloth; sequentially and continuously feeding said cementitious slurry having a solids content of 5 to 60% at at least two positions onto said filter cloth and glass fiber at at least one position onto said filter cloth; uniformly mixing the deposited material by beating the material after it has been fed onto the filter cloth thereby forming a green, laminated sheet of cementitious material; confining the width of the deposited sheet by the side wall members of each suction box; removing excess water from said deposited sheet by applying suction to said suction boxes by a suction trough connected to a suction device; releasing the suction on the suction boxes so that the filter cloth can separate from the perforated plates as the filter cloth and conveyor continuously move and then separating the deposited sheet from the filter cloth; and continuously moving said conveyor so that said boxes are returned to the point at which said filter cloth comes into contact with said perforated plates of said suction boxes.

4,194,947

TRANSFERRING A WEB FROM A PICK-UP FABRIC TO A FLOW-THROUGH DRYING WIRE

Markku Huostila, Nokia, and Timo Haapsaari, Keski-Palokka, both of Finland, assignors to Oy Nokia Ab & Valmet Oy, Helsinki, Finland

Filed Jul. 6, 1978, Ser. No. 922,274
Claims priority, application Finland, Jul. 8, 1977, 772149
Int. Cl.[2] D21F *5/18*
U.S. Cl. 162—207 **16 Claims**



1. A method in a paper making machine for transferring a web from a pick-up fabric to a flow-through drying wire and for transporting the web supported by said drying wire over a flow-through dryer cylinder,said drying wire engaging said drying cylinder, comprising the steps of:

passing a section of said flow-through drying wire over the web supported by the pick-up fabric defining a sandwich structure of the drying wire, the web and the pick-up fabric;

applying a first vacuum from a first vacuum member on said sandwich structure from the flow-through drying wire side thereof over a narrow first detaching zone;

deviating the direction of the pick-up fabric with respect to the flow-through wire;

applying a second vacuum from a second vacuum member over a second holding zone substantially immediately subsequent to said first detaching zone in the direction of web travel from the flow through drying wire side thereof,said first and second vacuums being supplied from the same source, and further including the step of providing means for fluidly communicating said first and second vacuum members and adjusting the relative magnitudes of the first and second vacuums by adjusting said fluid communication means.

7. Apparatus in a paper making machine for transferring a web from a pick-up fabric to a flow-through drying wire comprising:

a pick-up fabric for transporting a web;

a lead-in roller engaging said pick-up fabric;

a flow-through drying cylinder;

a flow-through drying wire having a draw defined between a section adapted to overlap the web supporting pick-up fabric on said lead-in roller and a section engaged on the flow-through drying cylinder;

means located adjacent said draw of said flow-through drying wire in the proximity of said lead-in roller for applying a first vacuum over a narrow first detaching zone of said flow-through wire draw; and

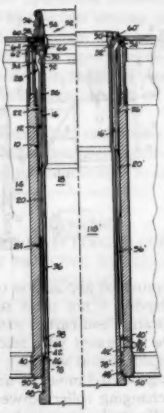
means located subsequent to said first vacuum applying means in the direction of web travel adjacent to said draw of said flow-through drying wire for applying a second vacuum over a second holding zone of said flow-through wire draw,said second vacuum applying means comprising a vacuum chamber having an air pervious guide surface located contiguous with said flow-through drying wire draw, said air pervious guide surface including a perforated stationary plate member.

4,194,948

LOCKING SUPPORT FOR NUCLEAR FUEL ASSEMBLIES

Eric Ledin, San Diego, Calif., assignor to General Atomic, San Diego, Calif.

Filed Nov. 14, 1977, Ser. No. 851,470
Int. Cl.[2] G21C *13/04*
U.S. Cl. 176—87 **9 Claims**



1. A locking device for supporting and locking a nuclear fuel assembly in place upon a fuel core support plate, the fuel assembly having an elongated, generally tubular configuration and the support plate having a vertically arranged bore for receiving the fuel assembly, comprising

a suppport and locking sleeve having a continuous tubular portion disposed between the fuel assembly and the support plate bore, an upper portion of said sleeve having a plurality of upwardly extending fingers each forming at its upper end a contact surface facing radially inwardly and upwardly and a radially outwardly facing surface, a lower portion of said sleeve having a plurality of axially extending fingers each forming at its lower end a contact surface facing radially outwardly and downwardly and an opposed radially inwardly facing surface,

means on the fuel assembly forming an annularly tapered surface arranged for engagement with said contact surfaces on said upwardly fingers, and

means on the support plate bore forming an annularly tapered surface arranged for engagement with said contact surfaces on said downwardly extending fingers,

said upper and lower fingers being sized so that their opposed surfaces bear on the support plate bore and the fuel assembly surface respectively while their contact surfaces are in engagement with the tapered surfaces on the fuel assembly and support plate bore respectively.

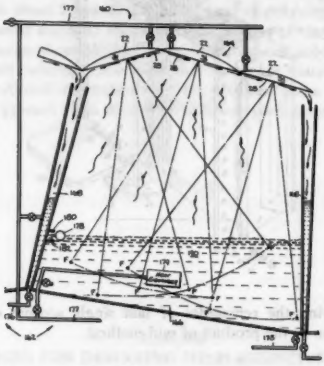
4,194,949
SOLAR DISTILLATION APPARATUS

Virgil Stark, 936 Fifth Ave., New York, N.Y. 10021

Continuation-in-part of Ser. No. 810,761, Jun. 30, 1977, Ser. No. 807,513, Jun. 20, 1977, and Ser. No. 806,291, Jun. 15, 1977, said Ser. No. 810,761, and Ser. No. 807,513, each is a continuation-in-part of Ser. No. 806,291, , said Ser. No. 810,761, is a continuation-in-part of Ser. No. 807,513,. This application Oct. 31, 1977, Ser. No. 845,862

Int. Cl.[2] B01D *3/00*; F24J *3/02*

U.S. Cl. 202—180 18 Claims



1. Apparatus for distillation of liquids using solar energy comprising:

first container means for containing a liquid to be distilled;

second container means for containing distilled liquid;

fluid lens means located above said first container means for concentrating the solar energy in at least one focus in said first container means to assist in the evaporation of said liquid therefrom, said fluid lens means defining an enclosure through which liquid to be distilled is passed and a planar lower surface extending at an angle with the horizontal and having a lower end disposed above said second container means, said planar surface being operative to condense evaporated liquid vapor thereon and transfer at least in part to said liquid being passed through said enclosure the heat of condensation released by condensing liquid vapor, whereby a substantial portion of the released heat of condensation is recovered, said planar surface being further operative to discharge condensed liquid vapor from said lower end into said second container means; and

means for passing the liquid to be distilled through said enclosure, said means for passing and said fluid lens means cooperating to discharge into said first container means said liquid to be distilled which has been passed through said enclosure at a rate which exceeds the rate at which said liquid is evaporated from said first container means such that the temperature of the liquid passed through said enclosure is maintained below the temperature of the evaporated liquid vapor.

4,194,950
LIQUID PURIFYING APPARATUS

Robert I. Zalles, Casilla Correo 966, La Paz, Bolivia

Filed Nov. 9, 1977, Ser. No. 849,931

Int. Cl.[2] C02B *1/04*

U.S. Cl. 202—185 R 12 Claims

1. Liquid purifying apparatus comprising, in combination;

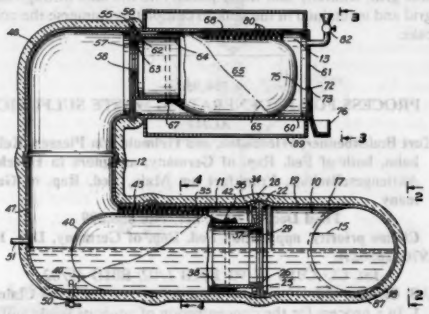
means defining an infeed chamber, an evaporator chamber and a condenser chamber arranged in that order along a flow path;

first bag means interposed across the flow path between the infeed chamber and the evaporator chamber, the first bag means being disposed substantially entirely in the evaporator chamber;

second bag means interposed across the flow path between the evaporator chamber and the condenser chamber, the second bag means being disposed substantially entirely in the condenser chamber;

each of the bag means comprising a flexible fibrous layer of a material which is highly absorbent with respect to the liquid to be purified;

means for introducing the liquid to be purified into said infeed chamber, the liquid flowing into the evaporator



chamber to the interior of the first bag means and spreading over substantially all of the fibers in the first bag means to form thin liquid films around the individual fibers;

means for introducing gaseous fluid into the infeed chamber and through the first bag means into the evaporator chamber, the gaseous fluid passing over said individual fibers to vaporize the liquid films thereon;

the vapor in the evaporator chamber flowing through the second bag means into the condenser chamber and being condensed therein; and

means for recovering the condensate from the condenser chamber.

4,194,951
COKE OVEN QUENCHING CAR

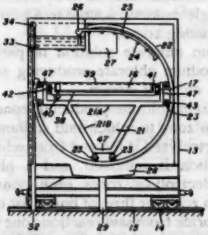
Erich Pries, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,492

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712111

Int. Cl.[2] C10B *39/10, 39/14*

U.S. Cl. 202—227 8 Claims



1. A coke quenching apparatus including the combination of a quenching car movable along a battery of coke ovens and adapted to receive and quench a carbonized coke cake from said ovens, said car carrying a substantially gas-tight enclosure having door means at opposite ends thereof, a quenching tank

disposed within said enclosure, said quenching tank being generally rectangular and having interior dimensions corresponding substantially to those of a coke cake to be quenched, one side of the tank being solid and one side being formed from a water-permeable grid, at least one end of the tank comprising door means to permit passage of a coke cake therethrough, water spray means in the enclosure adapted to spray water uniformly over the tank, and means for rotatably mounting the tank in the enclosure for movement between a vertical position wherein the sides of the tank are vertically disposed for receiving or discharging coke and a horizontal position for quenching the coke in which said solid side is below said water-permeable grid, whereby said water passes into the tank through said grid and is retained in the tank to completely immerse the coke cake.

4,194,952

PROCESS FOR REGENERATING WASTE SULFURIC ACID

Kurt Bodenbenner, Wiesbaden, and Helmold von Plessen, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,899

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656236

Int. Cl.[2] C01B *17/90*; B01B *1/02*; B01D *19/02*

U.S. Cl. 203—12 **4 Claims**

1. In a process for the concentration of aqueous waste sulfuric acid by evaporating water therefrom during which the acid tends to foam, the improvement which comprises adding to, prior to or during said concentration by evaporation but subsequent to contamination of the waste acid, and maintaining in said acid an amount of defoamer consisting of an agent selected from the group consisting of alkylsulfonic acids and the salts thereof, monoalkylbenzene monosulfonic acids, the alkyl moiety of each said monosulfonic acid being of from 6 to 20 carbon atoms, and the salts thereof, monoalkylbenzene disulfonic acids, the alkyl moiety of each said disulfonic acid being of from 6 to 20 carbon atoms, and the salts thereof, and mixtures thereof, which is sufficient to effect suppression of the formation of foam.

4,194,953

PROCESS FOR PRODUCING CHLORATE AND CHLORATE CELL CONSTRUCTION

David G. Hatherly, Mississauga, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Feb. 16, 1979, Ser. No. 12,593

Int. Cl.[2] C25B *1/26, 9/00*

U.S. Cl. 204—95 **19 Claims**

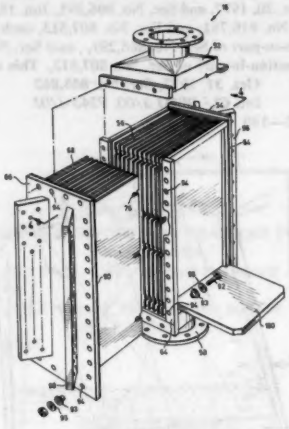
1. A method for the production of sodium chlorate, which comprises

feeding sodium chloride solution to be electrolyzed in parallel from a single make-up source to a plurality of sodium chlorate-producing zones,

removing sodium chlorate solution in parallel from said plurality of sodium chlorate-producing zones to form a single sodium chlorate stream,

each of said sodium chlorate-producing zones comprising a single reaction zone to which said sodium chloride solution to be electrolyzed is fed and from which said sodium chlorate solution is removed, and a plurality of diaphragmless electrolysis zones each connected to said single reaction zone for flow of liquor for electrolysis rich in sodium chloride from said reaction zone into the respective electrolysis zone and for flow of electrolyzed liquor lean in sodium chloride from the respective electrolysis zone into said reaction zone,

establishing said single make-up source of sodium chloride solution by adding fresh sodium chloride solution to part of said single sodium chlorate stream, adjusting the pH of the resulting mixed solution to a value required for electrolysis and subjecting the pH adjusted mixed solution to heat exchange to provide said single make-up source with the required temperature, and



recovering the remainder of said single sodium chlorate stream as the product of said method.

4,194,954

ELECTROLYTIC ETCH PREPARATION OF SEMICONDUCTOR SURFACES

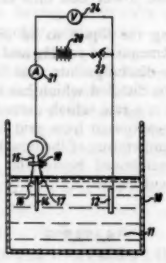
Marc M. Faktor, Hertfordshire, and John L. Stevenson, Suffolk, both of England, assignors to The Post Office, London, England

Filed Mar. 8, 1978, Ser. No. 884,388

Claims priority, application United Kingdom, Mar. 11, 1977, 10455/77

Int. Cl.[2] C25F *3/12*

U.S. Cl. 204—129.3 **12 Claims**



1. A method of preparing a surface of a semiconductor by etching with a two-component electrolyte comprising:

immersing a semiconductor and a spaced electrode in a two component non-aqueous electrolyte and establishing a potential between said semiconductor and said electrode;

forming an oxide coating on the semiconductor with a first component of the electrolyte; and

dissolving said oxide coating with the second component of the electrolyte.

4,194,955

ULTRAVIOLET CURABLE SELF-PIGMENTED COATING COMPOSITION

Michael T. Nowak, Westfield, and Charles B. Rybny, Somerset, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,203
Int. Cl.[2] C08F 8/00, 2/50; C08G 2/02
U.S. Cl. 204—159.15 3 Claims

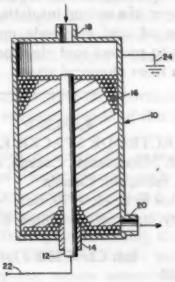
1. A light-transmissive coating composition which is ultraviolet radiation curable to a white opaque film comprising (1) between about 5 and 20 weight percent of polyvinyl butyral, (2) between about 35 and 45 weight percent of vinyl acetate, (3) between about 35 and 45 weight percent of polymerizable monomer selected from trimethylolpropane triacrylate and pentaerythritol triacrylate, and (4) between about 1 and 10 weight percent of an ultraviolet-sensitive photoinitiator.

4,194,956

METHOD FOR DEWAXING HIGH-RESISTIVITY OILS

Edward S. Seguine, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1978, Ser. No. 972,643
Int. Cl.[2] B03C 5/00; C25B 7/00
U.S. Cl. 204—186 15 Claims



1. A method of dewaxing a high-resistivity refined vegetable oil free of significant amounts of dispersed water to provide a dewaxed clear liquid vegetable oil having excellent refrigerator clarity, said method comprising the steps of:

(a) tempering said refined vegetable oil at a sufficiently cool temperature until said waxes nucleate and begin crystal growth, wherein said nucleation temperature is from about 25° C. to about 50° C., and wherein said oil is tempered for at least about 12 hours,

(b) growing said nucleated wax crystals at an appropriately cool temperature until said wax crystals are large enough to be electrostatically removed by dielectrophoretic filtration, wherein said growing temperature is from about 0° C. to about 28° C. for at least about 1 hour, and

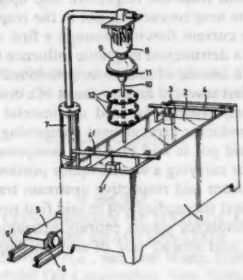
(c) passing said cooled oil of step (b) through an electrofilter at an appropriate flow rate sufficient to trap said crystallized waxes in said electrofilter to provide said dewaxed vegetable oil having excellent refrigerator clarity, said electrofilter comprising an electrostatic field and a wax trapping filter means for dielectrophoretic filtration.

4,194,957

APPARATUS FOR THE ELECTROLYTIC TREATMENT OF METALLIC PARTS

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Jul. 11, 1978, Ser. No. 923,529
Claims priority, application France, Jul. 20, 1977, 77 22333
Int. Cl.[2] C25D 17/06, 17/22
U.S. Cl. 204—199 9 Claims



1. Apparatus for the electrolytic treatment of metallic parts comprising:

(a) an electrolytic treatment tank,

(b) an electrode which is connected to one pole of an electrical sourse,

(c) an axially rotatable insulating plate to support the parts to be treated in the tank, the plate having elongated radial stud holes which are regularly spaced in the vicinity of its periphery and means at its periphery connected to the electrode,

(d) means for feeding in turn each part to a radial stud hole, and

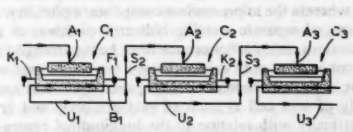
(e) means for rotating the plate about its axis at a speed which is sufficient to produce by centrifugal force a radial displacement of the parts towards the periphery of the plate to contact the peripheral electrode connection means.

4,194,958

ARRANGEMENT FOR COMPENSATING FOR DETRIMENTAL MAGNETIC INFLUENCE BETWEEN TWO OR MORE ROWS OF TRANSVERSE ELECTROLYTIC POTS OR CELLS FOR PRODUCING ALUMINUM, BY ELECTROLYTIC REDUCTION

Hans G. T. Nebell, Snaroya, Norway, assignor to Ardal og Sunndal Verk a. s., Oslo, Norway

Filed Oct. 6, 1978, Ser. No. 949,381
Claims priority, application Norway, Oct. 19, 1977, 773589
Int. Cl.[2] C25C 3/16, 3/06
U.S. Cl. 204—243 M 2 Claims



1. In an electrolytic pot line for producing aluminum by electrolytic reduction, said pot line being of the type having at least first and second parallel rows of pots, means for supplying electric current to said pot line for the operation of said pots, each of said pots extending transverse to the longitudinal direction of the respective said row and having upstream and downstream, taken in the direction of current flow, longer sides extending transverse to said longitudinal direction and first and

second shorter sides extending parallel to said longitudinal direction, each said pot having an anode and a cathode, said cathode of each said pot having on said upstream and downstream longer sides thereof a plurality of cathode taps, each said pot having upstream and downstream transverse bus bars extending transverse to said direction of the respective said row for collecting electric current from said cathode taps on said respective upstream and downstream longer sides, each said pot having at least two current conductors extending underneath said pot for carrying a first major portion of the electric current from the respective said upstream transverse bus bar to the next succeeding pot in the respective said row, whereby the current flowing through a first said row may be subjected to a detrimental magnetic influence by current flowing through a second of said rows positioned laterally on one side of said first row, the improvement of a conductor arrangement for compensating for said detrimental magnetic influence, said conductor arrangement comprising:

for each said pot in said first row, compensation conductor means for carrying a second minor portion of said electric current from said respective upstream transverse bus bar to said next succeeding pot in said first row, said compensation conductor means entirely extending along the respective said shorter side of said pot facing said second row.

4,194,959

ELECTROLYTIC REDUCTION CELLS

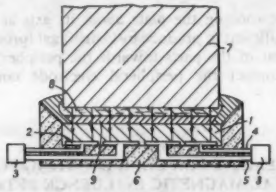
Thomas J. Hudson, Arvida; Jean-Paul R. Huni, Kingston; Vinko Potocnik, and Donald W. MacMillan, both of Arvida, all of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Nov. 16, 1978, Ser. No. 961,200

Claims priority, application United Kingdom, Nov. 23, 1977, 48800/77

Int. Cl.[2] C25C *3/06, 3/16*

U.S. Cl. 204—243 R **5 Claims**



1. An electrolytic reduction cell for the production of aluminium, said cell having a carbonaceous floor which constitutes the cell cathode, means for supporting a body of molten electrolyte and a pad of molten metal over said floor and anode means arranged to contact such electrolyte, said cell being provided with longitudinally arranged line conductors extending along both longitudinal sides of said cell for connection to said floor cathode at longitudinally spaced positions therealong; wherein the improvement comprises: a plurality, greater than two, of separate metallic collector members at each of said positions, said carbonaceous floor being arranged in electrical connection with said collector members, said separate metallic collector members being spaced apart and extending laterally of said cell at each of said positions and arranged symmetrically with relation to the longitudinal centre line of the cell; and a plurality of connector members, one for each collector member, each of said collector members being electrically connected intermediate its ends to a connector member, leading to a line conductor and electrically insulated with regard to said floor, the resistance of the connection between each collector member and the associated line conductor being sized to provide a desired current distribution and reduced transverse current flow in the pad of molten metal in the region of such collector member.

4,194,960

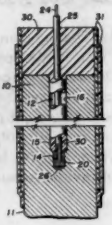
ELECTRICAL CONNECTION FOR ELECTRODES

Roy H. Bleikamp, Jr., Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 21, 1978, Ser. No. 926,674

Int. Cl.[2] C25D *17/10*

U.S. Cl. 204—280 **4 Claims**



1. An electrical connection between an electrical cable and an electrode comprising:

an electrode, said electrode having an end having a hole drilled axially;

an electrical cable, said electrical cable having insulation, said insulation being stripped from a portion of said electrical cable to form said electrical connection;

an annular slug of an electrically conductive material, said annular slug being disposed about said stripped portion of said electrical cable and said stripped portion of said electrical cable and said annular slug being disposed within said hole within said electrode, said annular slug being compressed within said hole;

a first insulating material filling said hole within said electrode and extending therefrom; and

at least one layer of a second insulating material placed about the portion of said electrode enclosing said electrical connection to protect said electrode about said electrical connection from chemical attack.

4,194,961

ELECTRODE SPACER ELEMENT

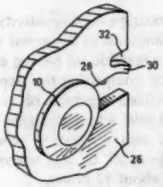
Roy E. Williams, Mississauga, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Feb. 16, 1979, Ser. No. 12,594

Claims priority, application United Kingdom, Sep. 29, 1978, 38671/78

Int. Cl.[2] C25B *13/02*

U.S. Cl. 204—286 **10 Claims**



1. In an assembly of closely-spaced electrode plates in an electrolytic cell, a plurality of electrically-insulating one-piece spacer elements mounted on said plates and spacing the electrode plates apart from each other, each of said spacer elements comprising:

an elongate shank portion of length slightly greater than the thickness of said electrode plate, and

a head portion integrally formed at each end of said shank portion and having an inner substantially planar surface to

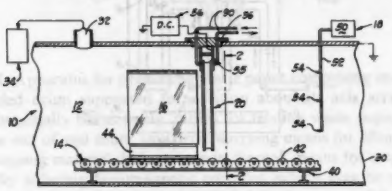
engage the adjacent outer surface of said electrode plate when assembled therewith and an outer substantially planar surface substantially parallel to said inner surface to engage an electrode plate to be spaced from said first-mentioned electrode plate, each said head portion having a maximum transverse dimension greater than the maximum transverse dimension of said shank portion.

4,194,962

CATHODE FOR SPUTTERING

Douglas L. Chambers, and Chong T. Wan Wan, both of Nashville, Tenn., assignors to Advanced Coating Technology, Inc., Franklin, Tenn.

Filed Dec. 20, 1978, Ser. No. 971,196
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—298 **16 Claims**



1. A sputtering cathode comprising:

(a) an elongated electrically conductive support structure;

(b) sputtering target means defining a band-like target face extending longitudinally of and circumferentially about said support; said target face comprising:

(i) first and second target face portions extending along the length of said support structure, said face portions facing away from said support structure in different directions; and,

(ii) first and second bridging face portions extending between adjacent respective ends of the target face portions;

(c) electrical connector structure for connecting said support structure to an electric power supply to enable emission of electrons from said cathode; and

(d) magnetic means for confining electrons emitted from the cathode to a belt-like region extending about the cathode adjacent but spaced from said target and bridging face portions, said magnetic means comprising members extending longitudinally along said support structure and along respective lateral sides of said target face portions, said members effective to direct magnetic fields across said target face portions so that said belt-like region extends substantially completely across the lateral extent of said face portions.

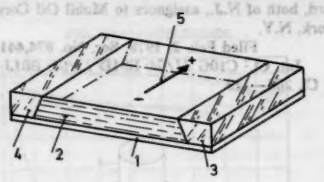
4,194,963

ELECTROPHORESIS APPARATUS

W. Donner Denckla, 405 Commonwealth Ave., Newton Ctr., Boston, Mass.

Filed Nov. 2, 1978, Ser. No. 957,222
Claims priority, application Sweden, Nov. 4, 1977, 7712499
Int. Cl.[2] G01N *27/28*
U.S. Cl. 204—299 R **4 Claims**

1. Electrophoresis apparatus provided with two end walls each bearing an electrode device, two side walls and a cooled bottom wall, the walls and the bottom forming a chamber intended to contain a conductive medium, characterized in that said side walls are wedge shaped and made of an electric non-conductive material the minimum transverse width of the wall



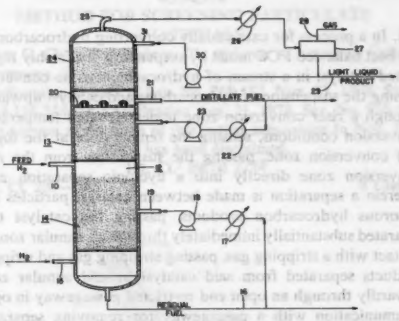
being adjacent to the cooled bottom wall and the maximum transverse width at the point remote from said bottom wall.

4,194,964

CATALYTIC CONVERSION OF HYDROCARBONS IN REACTOR FRACTIONATOR

Nai Y. Chen, Titusville, N.J., and Ikai Wang, Hsinchu, Taiwan, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 10, 1978, Ser. No. 922,915
Int. Cl.[2] C10G *13/02, 37/06, 23/02*
U.S. Cl. 208—108 **8 Claims**

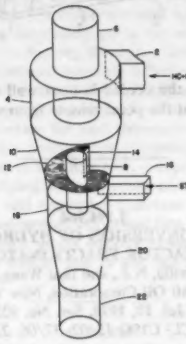


1. A process for simultaneous distillation and hydrocracking of heavy hydrocarbon feeds stocks boiling predominantly above about 650° F. which comprises introducing said stocks to an intermediate point as the sole hydrocarbon feed in a vertical column of a hydrocracking catalyst on a porous solid support, introducing hydrogen to said column below said intermediate point for flow upwardly in said column at a rate sufficient to act as a stripping medium between about 500 and 25,000 standard cubic feet of hydrogen per barrel of said feedstock, maintaining a temperature gradient in said column from a maximum below said intermediate point by reason of exothermic heat of hydrocracking to a minimum thereabove whereby higher rolling constituents of said stocks are caused to flow downwardly as liquid counter-current to said hydrogen at hydrocracking conditions of 300 to 3000 psig, LHSV of 0.25 to 2 and temperature of 600°–1000° F. while lighter constituents and hydrocracking conversion products are caused to flow upwardly as vapor concurrent with said hydrogen resulting in fractional distillation of feed stocks and conversion products in said column, withdrawing liquid hydrocarbon products from the bottom of said column, withdrawing distillate hydrocarbon product vapor from the top of said column, condensing said product vapor and recycling such condensed liquid product as reflux to the top of said column for temperature control.

4,194,965
FLUID CATALYTIC CRACKING

Ronald P. Billings, Clementon, and Ellen M. Hysell, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,441
Int. Cl.[2] C10G *11/04*; B01D *15/06*; B01J *23/64*
U.S. Cl. 208—113 4 Claims



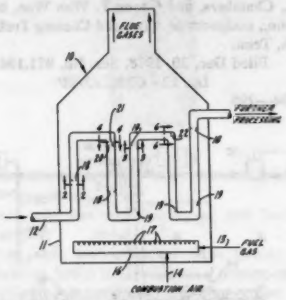
1. In a process for catalytically converting hydrocarbons in the heat balanced FCC mode by suspending hot freshly regenerated catalyst in a stream of hydrocarbons to be converted, passing the suspension of hydrocarbons and catalyst upwardly through a riser conversion zone under elevated temperature conversion conditions, sensing the temperature at the top of said conversion zone, passing the suspension from the riser conversion zone directly into a cyclonic separation zone wherein a separation is made between catalyst particles and vaporous hydrocarbon products, passing the catalyst thus separated substantially immediately through an annular zone in contact with a stripping gas, passing stripping gas and stripped products separated from said catalyst in said annular zone upwardly through an open end restricted passageway in open communication with a passageway for removing separated hydrocarbon vapors from said cyclonic separation zone, subjecting catalyst so stripped to regeneration in a regeneration zone wherein the catalyst is contacted with air at elevated temperature to burn carbonaceous deposits therefrom whereby the catalytic activity is restored and the catalyst is heated by said burning, recycling the hot regenerated catalyst to said first stage for suspension in said stream of hydrocarbons, passing gaseous products of combustion from said regeneration to boiler means for recovery from said combustion products of heat values thereof, the capacity of said boiler means constituting a constraint on the volume of gaseous products of combustion which may be passed thereto from said regeneration and controlling the rate of recycling said hot regenerated catalyst responsive to the temperature sensed at the top of said conversion zone in a manner to maintain the temperature so sensed substantially constant:

the improvement which comprises conducting said regeneration under conditions to convert carbon monoxide in said regeneration zone including an amount of air adequate for so converting carbon monoxide and in contact with a sufficient amount of catalyst that a major portion of the heat generated by combustion of carbon monoxide is absorbed by said catalyst, said combustion of carbon monoxide being such that the gaseous products of combustion discharged from said regeneration zone has a ratio of carbon dioxide to carbon monoxide of at least 2 to 1.

4,194,966
APPARATUS AND METHOD FOR IMPROVED FLUID DISTRIBUTION IN A TUBE OF A DIRECT FIRED HEATER

Robert R. Edison, Olympia Fields, and Thorpe Dresser, Markham, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 745,884, Nov. 29, 1976, which is a continuation of Ser. No. 599,271, Jul. 25, 1975, abandoned. This application Jul. 14, 1978, Ser. No. 925,001
Int. Cl.[2] C10G *9/14*, *9/20*
U.S. Cl. 208—132 4 Claims



1. In a process wherein at least one hydrocarbon product is recovered which includes the steps of transferring heat at least partially to a hydrocarbon liquid-vapor mixture flowing in at least one tube of said direct fired heater to vaporize at least a portion of said hydrocarbon liquid within said tube; and recovering at least one hydrocarbon product derived from said liquid-vapor mixture: the improvement which comprises causing said hydrocarbon liquid-vapor mixture to flow through at least one tube of a direct fired heater; abruptly reducing the inside cross-sectional area of said tube available to said flow, and causing said mixture to flow through substantially the same tube inside cross-sectional area both before and after said abrupt reduction, said reduction in cross-sectional area being sufficient to inhibit the formation of local areas of said tube which are at an elevated temperature relative to the temperature of said tube immediately surrounding said areas.

4,194,967
HYDROCARBON HYDROREFINING PROCESS UTILIZING A NON-STOICHIOMETRIC VANADIUM SULFIDE CATALYST

John G. Gatsis, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 9, 1979, Ser. No. 18,971
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—215 4 Claims

1. A process for hydrorefining a hydrocarbon charge stock which comprises reacting an admixture of said charge stock with hydrogen and with non-stoichiometric vanadium sulfide catalyst which is prepared according to the following method:

(a) contacting vanadium oxide with ammonium sulfide at a temperature and pressure sufficient to form an ammonium salt of the vanadium sulfide;

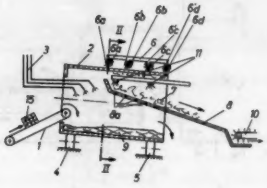
(b) thermally decomposing the resulting ammonium salt of the vanadium sulfide derived from step (a) in a non-oxidative atmosphere; and

(c) recovering said vanadium sulfide catalyst from step (b).

4,194,968
METHOD AND APPARATUS FOR SEPARATING MAGNETIC PARTICLES FROM WASTE PAPER

Lothar Pfalzer, and Siegbert Fischer, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,192
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1977, 2750191
Int. Cl.[2] B03C 1/14
U.S. Cl. 209—3 9 Claims



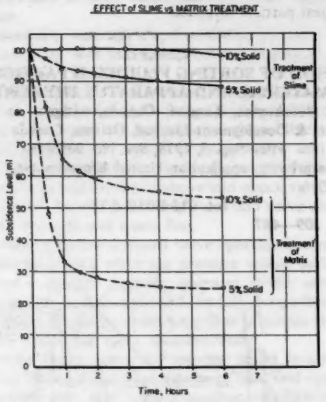
1. Apparatus for processing waste paper comprising an open ended drum supported for rotation about its axis arranged substantially horizontally, means for feeding waste paper into one end of said drum, said drum carrying means for lifting and dropping material during rotation thereof, means for magnetically adhering ferromagnetic particles, which may be mixed with said waste paper to only a first arcuate portion of the wall of said drum and releasing adhered particles for the remaining arcuate portion thereof, said arcuate portion extending downwardly from the upper portion of said drum and being on the side of the drum which is moving upwardly, and means for collecting such particles as they drop from the upper portion of said drum, thereby separating such particles from the waste paper, said collecting means including an inclined trough extending from an upper position adjacent said drum through the other end thereof to a lower position, whereby material collected from said drum gravitates down said trough to the exterior of said drum, means for introducing treating solutions into said drum, said trough having a multiplicity of perforations in the bottom thereof, and further means for applying a liquid medium into said trough for increasing the liquidity of the material in said trough.

4,194,969
ORE BENEFICIATION PROCESS

Harold S. Chung, Lawrenceville; George C. Johnson, Princeton, and Tracy J. Huang, Trenton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 812,972
Int. Cl.[2] B03D 3/06
U.S. Cl. 209—5 10 Claims

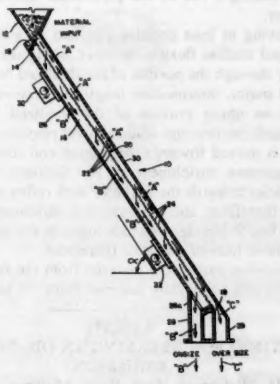
1. A method of substantially modifying the formation of slimes during beneficiation of a Florida phosphate ore matrix, the method comprising adding to a matrix slurry, prior to washing or classification, an electrolyte solution comprising a water soluble metal salt, the metal cation of said salt being Al, Ca, Mg or Zr.



4,194,970
METHOD FOR SCREENING PARTICULATE MATERIALS

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Continuation-in-part of Ser. No. 768,157, Nov. 21, 1978, Pat. No. 4,126,543. This application Aug. 21, 1978, Ser. No. 935,144
The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.
Int. Cl.[2] B07B 1/28
U.S. Cl. 209—263 8 Claims



1. A method of screening materials including solid particles to separate on size and oversize particles comprising the steps of:

rapidly flowing said material including said solid particles downwardly along an upper surface of a screen mesh sloped at an angle in the range of 40°–60° with respect to horizontal and having openings larger than a predetermined maximum dimension desired for on size particles intended to pass through said mesh; and

repeatedly redirecting particles of said flowing material that are bouncing away from said screen mesh back toward said openings in said screen mesh by bouncing said parti-

cles off a substantially impervious rebound shield spaced above and substantially parallel to the upper surface of said screen mesh at a distance in the range of greater than one and not more than three times the diameter of the largest particle screened.

4,194,971

METHOD OF SORTING FLUIDIZED PARTICULATE MATERIAL AND APPARATUS THEREFOR

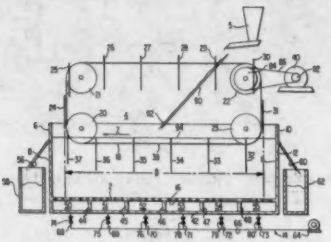
Jan M. Beeckmans, London, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 5, 1978, Ser. No. 939,811

Claims priority, application United Kingdom, Sep. 13, 1977, 38112/77

Int. Cl.[2] B03B *4/00*

U.S. Cl. 209—467 **2 Claims**



1. A method of sorting fluidized particulate material which comprises:

(a) feeding particulate material to an elongated, horizontally extending container having a gas permeable base and at least a major, intermediate lengthwise extending portion of the interior thereof for fluidized particulate material above the gas permeable base unobstructed by the container for the flow of fluidized particulate material therealong towards both a first end and a second end thereof,

(b) fluidizing a bed of the particulate material in the container,

(c) moving at least paddles attached to a lower side of a looped endless flexible member, along the container and only through the portion of the fluidized bed in the said at least major, intermediate lengthwise extending portion so that an upper portion of the fluidized bed is moved towards the first end while a lower portion of the fluidized bed is moved towards the second end thereby causing a progressive enrichment of the fluidized bed in lighter particles towards the first end with reflux of lighter particles therefrom, and a progressive enrichment of the fluidized bed in heavier particles towards the second end with reflux of heavier particles therefrom,

(d) removing particulate material from the first end, and

(e) removing particulate material from the second end.

4,194,972

METHOD FOR BREAKING AN OIL-IN-WATER EMULSION

Marvin H. Weintraub, Oak Park; Matthew A. Dzieciuch, Dearborn Heights, both of Mich., and Roy L. Gealer, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 754,790, Dec. 27, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 821,009

Int. Cl.[2] C02B *1/20*; C02C *5/04*

U.S. Cl. 210—43 **3 Claims**

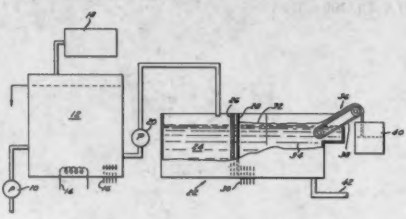
1. A method of breaking an oil-in-water emulsion which comprises:

establishing a porous ferrous ion producing electrode;

locating a supply of oil-in-water emulsion on one side of said porous ferrous ion producing electrode, said supply of the oil-in-water emulsion being substantially free of ferrous ions;

flowing a fixed volume of said supply of the oil-in-water emulsion through said porous ferrous ion producing electrode per unit of time;

flowing less than a passivating current per unit area of electrode through said porous ferrous ion producing electrode per unit of time, thereby to dissolve into said fixed volume of the oil-in-water emulsion ferrous ions in sufficient quantity to break the oil-in-water emulsion whereby said fixed volume of the oil-in-water emulsion is substantially free of ferrous ions on one side of said electrode, but has a uniformly dispersed amount of ferrous ions therein on the other side of said electrode;



oxidizing said uniformly dispersed ferrous ions in said fixed volume of the oil-in-water emulsion to ferric ions, the latter ions being effective in breaking the emulsion; and

permitting said ferric ions to break the oil-in-water emulsion.

4,194,973

METHOD OF LOWERING THE COLOR OF EFFLUENT WHICH CONTAINS ARYL AZO- OR ARYL NITRO-CONTAINING COMPOUNDS

Roy E. Smith, Mill Hall, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Continuation of Ser. No. 782,440, Mar. 29, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,164

Int. Cl.[2] C02B *1/20*; C02C *5/02*

U.S. Cl. 210—50 **8 Claims**

1. A method of treating effluent, which contains chromophoric aryl azo- and/or aryl nitro-containing compounds, to lower the color of the effluent to predetermined ecologically acceptable levels, said method consisting essentially of the step of contacting said effluent with an effective amount of a reducing substance consisting of Fe(II) in the presence of metallic iron at a pH in the range of from about 3 to about 7.5 and at a temperature of from about 40° C. to about 80° C. for a time sufficient to chemically reduce and destroy the chromophore of said aryl azo- and aryl nitro-containing compounds and lower the color of the effluent to the predetermined ecologically acceptable levels.

4,194,974

PRESSURE MONITORING DEVICE

Ulf L. P. Jonsson, Furulund, Sweden, assignor to Gambro AB, Lund, Sweden

Filed Dec. 5, 1977, Ser. No. 857,823

Claims priority, application Sweden, Dec. 3, 1976, 7613577

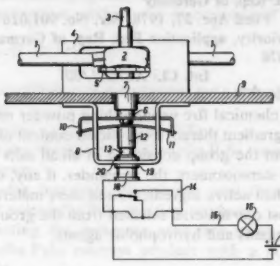
Int. Cl.[2] B01D *31/00*

U.S. Cl. 210—90 **24 Claims**

1. A pressure monitoring device adapted to couple a pressurized fluid conduit with a tripping device, said tripping device including a tripping switch movable between a first position in which a tripping signal is generated and a second position in which a tripping signal is not generated, and biasing means for biasing said tripping switch into said first position, the pressure monitoring device comprising:

pressure transmission means operable in a first mode and in

a second mode, said pressure transmission means when operating in said first mode being responsive to the pressure of the fluid in the pressurized fluid conduit, and when operating in said second mode being independent of the pressure of the fluid in the pressurized fluid conduit; and coupling means operatively associated with said pressure transmission means and said tripping device for coupling said pressure transmission means to said tripping device, said coupling means being positionable in a first position and in a second position, said coupling means transmitting



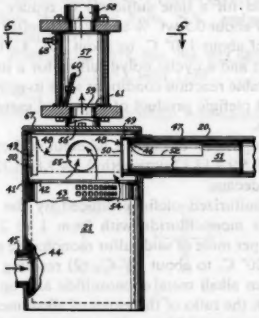
a pressure signal proportional to the pressure of the fluid in the pressurized fluid conduit to said tripping switch when said coupling means is positioned in said first position and said pressure transmission means is operating in said first mode whereby said tripping device generates a tripping signal when the pressure of the fluid passes a predetermined limit, and said coupling means biasing said tripping switch towards said second position independent of the pressure of the fluid in the pressurized fluid conduit when said coupling means is positioned in said second position.

4,194,975

BACKWASH SYSTEM FOR SWIMMING POOL

Marvin E. Baker, 815 Ewing Ave., Nashville, Tenn. 37203

Filed Jan. 8, 1979, Ser. No. 1,414
Int. Cl.² E04H *3/20*; B01D *23/26*
U.S. Cl. 210—108 **4 Claims**



1. A filtration backwash system for a swimming pool including a discharge line and a return line, comprising:

(a) a filter including a filter media and first and second filter ports on opposite sides of said filter media, said second filter port being in fluid communication with said return line,

(b) a strainer housing having a strainer member having opposite sides therein and a valve chamber on one side of said strainer member,

(c) a first strainer port in said strainer housing on the other side of said strainer member in fluid communication with said first filter port,

(d) a second strainer port in said valve chamber in fluid communication with said pool discharge line,

(e) a waste line in fluid communication with said valve chamber,

(f) a substantially vertically disposed discharge port in fluid communication with said waste line and having an upper valve seat,

(g) a discharge check valve member swingably mounted in said waste line above said discharge port operable only by gravity to close said discharge port, and operable to open said discharge port when the pressure below said valve member is greater than the combined weight of the check valve member and the liquid above said check valve member to permit flow of liquid only from said valve chamber outward through said waste line,

(h) a movable pressure-actuated valve operable to close said pool discharge line when the pressure within said valve chamber is greater than the pressure within said pool discharge line, and to open said pool discharge line when the pressure in said pool discharge line is greater than the pressure within the valve chamber, and

(i) reversible pump means for moving liquid in a normal direction through said pool discharge line, said open second strainer port, said strainer member, said first strainer port, said first filter port, said filter media, said second filter port and the return line, and in a reverse direction through the return line, said second filter port, said filter media, said first filter port, said first strainer port, said strainer member and said waste line.

4,194,976

GRAVITATIONAL SEPARATOR HAVING MEMBRANE BAFFLES THEREIN

Eli I. Robinsky, 66 Lytton Blvd., Toronto, Ontario, Canada

Filed Mar. 29, 1978, Ser. No. 891,184
Claims priority, application Canada, Oct. 5, 1977, 288155
Int. Cl.² B01D *43/00*
U.S. Cl. 210—137 **12 Claims**

1. A cross flow gravitational separator having membrane baffles therein to remove suspended solids from a liquid comprising:

(a) a vertically extending cylindrical tank having liquid inlet, a liquid outlet, and a bottom solids removal outlet,

(b) a single vertically extending membrane assembly having a rectangular horizontal cross section, the membrane assembly being received in the cylindrical tank to form separate vertically extending arc-shaped segments between the membrane assembly and the tank wall including an inflow segment in communication with the liquid inlet, an oppositely located outflow segment in communication with the liquid outlet, and a solids receiving segment in communication with the solids removal outlet,

(c) a plurality of substantially parallel spaced membranes extending across the membrane assembly, the membranes sloping downwardly towards the solids receiving segment,

(d) first liquid flow distributor means located between the inflow segment and the membrane assembly whereby the liquid from the liquid inlet is distributed to flow between

the membranes from the inflow segment to the outflow segment, the direction of flow being across the slope of the membranes, and

(e) means restricting flow from the membrane assembly to the solids receiving segment.

4,194,977

EXPRESSING PLATE FOR USE IN FILTER PRESS

Shin-ichi Kubota, Osaka, and Masayuki Horimoto, Sakai, both of Japan, assignors to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Apr. 18, 1979, Ser. No. 31,028

Claims priority, application Japan, May 17, 1978, 53-59415

Int. Cl.² B01D *25/12*

U.S. Cl. 210—231 **8 Claims**

1. An expressing plate for use in a filter press including a core plate with a prefilt passage throughgoing bore formed at the center thereof, and a pair of flexible fluid-tight sheets applied to the front and back of said core plate and connected together by a cylindrical portion extending through said throughgoing bore to define a prefilt passage bore, said expressing plate being characterized by comprising an annular body fitted between the inner periphery of the throughgoing bore and the outer periphery of the cylindrical portion of the pair of flexible fluid-tight sheets, and slipping-off preventing members applied to the front and back of the fitting boundary region between the core plate and the annular body to extend over both the core plate and the annular body, said slipping-off preventing members being fixed to at least either the core plate or the annular body.

4,194,978

METHOD AND DEVICE FOR REMOVING SOLID AND/OR LIQUID MEANS CONTAINING HARMFUL SUBSTANCES

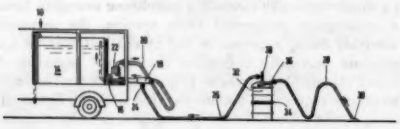
Erhard Crema, Leuchte 96, Frankfurt am Main, Fed. Rep. of Germany (6000)

Filed Dec. 22, 1978, Ser. No. 972,462

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758038

Int. Cl.² B04C *1/00*

U.S. Cl. 210—242 S **12 Claims**



1. A system for removing harmful solid and/or liquid matter from a surface, comprising, a separator means including an inlet for sucking said matter from said surface, a container for containing said matter after said sucking, and an outlet; a reservoir containing water; pump means including ejector means having a first inlet for feeding water from said reservoir, a second inlet for sucking fluid from the outlet of said separator means and an outlet means for discharging water into said reservoir, the pumping means pumping water from and back into the reservoir in a closed loop circulation to create a vacuum at said first-mentioned inlet.

4,194,979

DRY CHEMICAL FIRE EXTINGUISHING POWDER CONTAINING ALKALI METAL GLUCONATE

Harald Gottschall, Hartwigstrasse 16, Schwäbisch Hall-Steinbach, Fed. Rep. of Germany

Filed Apr. 27, 1978, Ser. No. 901,016

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2728076

Int. Cl.² A67D *1/00*

U.S. Cl. 252—7 **8 Claims**

1. A dry chemical fire extinguishing powder comprising as an active ingredient thereof a significant content of a substance selected from the group consisting of alkali salts of gluconic acid and its stereoisomers, the remainder, if any, of said powder, other than active ingredients and inert materials, consisting of at least one material selected from the group consisting of flowing agents and hydrophobic agents.

4,194,980

SULFURIZED OLEFIN LUBRICANT ADDITIVES AND COMPOSITIONS CONTAINING SAME

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,913

Int. Cl.² C10M *1/38*

U.S. Cl. 252—45 **30 Claims**

1. A lubricating oil composition or grease prepared therefrom containing a major amount of a lubricating oil and a minor amount sufficient to improve extreme pressure properties thereof of a modified polysulfurized olefin produced by (1) reacting sulfur monochloride with an olefin having from 2 to 6 carbon atoms, reacting the product of that reaction with an alkali metal monosulfide and optionally free sulfur, wherein the ratio of the moles of alkali metal sulfide to the gram-atoms of free sulfur is from about 1.8 to about 2.2:1, and reacting the resulting product with an inorganic base in aqueous solution in an amount and for a time sufficient to reduce the chlorine content below about 0.5 wt. % and (2) thereafter reacting at a temperature of about 130° C. to about 155° C. the thus produced product and a cyclic polydisulfide for a time sufficient and under suitable reaction conditions so as to produce a modified sulfurized olefinic product of improved extreme pressure characteristics.

26. The composition of claim **1** wherein said cyclic polydisulfide is 1,1,5,5,9,9,13,13-octamethyl-3,4,7,8,11,12,15,16-octathiacyclohexadecane.

27. A polysulfurized olefin produced by the steps of (1) reacting sulfur monochloride with from 1 to 2 moles of a C_2–C_{12} olefin per mole of said sulfur monohalide at a temperature of from 20° C. to about 80° C., (2) reacting the product thereof with an alkali metal monosulfide and optionally free sulfur, wherein the ratio of the moles of alkali metal monosulfide to the gram-atoms of free sulfur is from about 1.8 to about 2.2:1 and (3) reacting this product with an aqueous solution containing from about 5 to about 20 wt. percent of an alkali metal hydroxide for a time sufficient to reduce the chlorine content below about 0.5 wt. percent, (4) reacting at a temperature of about 130° C. the thus produced sulfurized product and a cyclic polydisulfide.

30. The polysulfurized olefin of claim **27** wherein the cyclic polydisulfide is 1,1,5,5,9,19,13,13,-octamethyl-3,4,7,8,11,12,15,16-octathiacyclohexadecane.

4,194,981
POLYURETHANE OF NEOPENTYL GLYCOL-PHOSPHOSULFURIZED POLYOLEFIN AND LUBRICANT CONTAINING SAME

Kenneth G. Hammond, Poughkeepsie, and Raymond C. Schlicht, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 28, 1978, Ser. No. 973,838
Int. Cl.[2] C10M *1/44*; C08K *5/01*; C08G *18/62*; C08K *5/10*
U.S. Cl. 252—46.7 **27 Claims**

1. A polyurethane polymer, useful as a dispersant in lube oil, which is the reaction product of a diisocyanate of the formula

$$O{=}C{=}N{-}X{-}N{=}C{=}O$$

wherein X is a divalent organo moiety and a polyol, said polyol prepared by

A. contacting a polyolefin with P_2S_5;

B. contacting the resultant polyolefin-P_2S_5 reaction product with steam;

C. removing inorganic phosphorus acid from the steam treated polyolefin-P_2S_5 reaction product;

D. contacting the inorganic acid free steam hydrolyzed polyolefin-P_2S_5 reaction product with a polyol of the formula

$$HO{-}CH_2{-}(R)_n{-}CH_2OH$$

wherein

n=0 or 1 and

R is a saturated or unsaturated substituted or unsubstituted alkylene group of 1 to 12 carbon atoms.

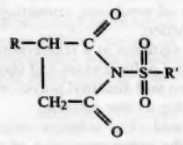
19. A lubricating oil composition comprising a major amount of lubricant oil and an effective detergent-dispersant amount of a polyurethane of claim 1, said lubricating oil selected from the group consisting of mineral lubricating oil, synthetic ester lubricating oil, synthetic ether lubricating oil, and synthetic hydrocarbon lubricating oil.

4,194,982
N-SULFONYLATED POLYALKENYLSUCCINIMIDE AND LUBRICANT COMPOSITION

Kechia J. Chou, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

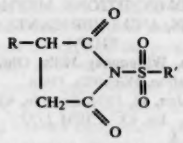
Filed Jul. 3, 1978, Ser. No. 921,691
Int. Cl.[2] C10M *1/38*
U.S. Cl. 252—47.5 **13 Claims**

1. An N-sulfonylated succinimide represented by the formula:



in which R is an aliphatic hydrocarbon radical having from 1 to 40 carbon atoms and R′ is a hydrocarbon radical having from about 6 to 20 carbon atoms.

8. A lubricating oil composition comprising a major portion of a hydrocarbon oil of lubricating viscosity, a minor amount of a metal-containing additive characterized by promoting the formation of hard deposits in an internal combustion engine and an effective deposit modifying amount of an N-sulfonylated hydrocarbon substituted succinimide represented by the formula:



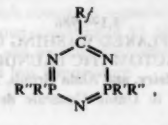
in which R is an aliphatic hydrocarbon radical having from about 1 to 40 carbon atoms and R′ is a hydrocarbon radical having from about 6 to 20 carbon atoms.

4,194,983
PERFLUORINATED POLYALKYLETHER BASED LUBRICANT COMPOSITION

Kazimiera J. L. Paciorek, Corona Del Mar; Reinhold H. Kratzer, Irvine; Jacquelyn Kaufman, Costa Mesa; Thomas I. Ito, and James H. Nakahara, both of Fountain Valley, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 6, 1979, Ser. No. 9,728
Int. Cl.[2] C10M *1/10*
U.S. Cl. 252—49.9 **10 Claims**

1. A lubricant composition comprising (1) a perfluorinated polyalkylether base fluid and (2) a corrosion inhibiting amount of a diphospha-s-triazine having the following formula:



wherein R/ is a perfluoroalkyl or perfluoroalkylether group and R′ and R″ are the same or different aryl groups.

4,194,984
ETHYLENE COPOLYMER/ETHYLENICALLY UNSATURATED NITROGEN REACTANT ENE ADDUCTS HAVING UTILITY AS MULTIFUNCTIONAL V. I. IMPROVERS FOR LUBRICATING OILS

Robert L. Elliott, Scotch Plains, and Won R. Song, Maplewood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 748,954, Dec. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 668,610, Mar. 19, 1976, abandoned. This application Aug. 17, 1978, Ser. No. 934,362
Int. Cl.[2] C10M *1/28*; C08L *77/08*
U.S. Cl. 252—51.5 A **7 Claims**

1. Hydrolyzed oil soluble ene adduct of a C_3 to C_{24} ethylenically unsaturated nitrogen-containing reactant having at least one electron withdrawing group and a copolymer of ethylene, at least one C_3 to C_{50} alpha-monoolefin and at least one C_5 to C_{24} non-conjugated diene, said hydrolyzed ene adduct containing carboxylate groups in molar concentration ranging up to about the molar concentration of said reactant and having a number average molecular weight of from about 1,000 to about 500,000.

4,194,985
POLYMERIC COMPOSITIONS, METHOD FOR THEIR PREPARATION, AND LUBRICANTS CONTAINING THEM

Lester E. Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jan. 14, 1974, Ser. No. 433,322
Int. Cl.[2] C10M 1/32
U.S. Cl. 252—51.5 A **8 Claims**

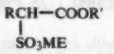
5. A lubricating composition comprising a major amount of a lubricating oil and a minor amount, sufficient to improve dispersancy, extreme pressure properties or viscosity, of a composition prepared by polymerizing, under free radical polymerization conditions and at a temperature of about 30°–90° C.; (A) at least one ethylenically unsaturated monomer having from 3 to about 10 carbon atoms and a terminal olefinic bond and selected from the group consisting of unsaturated monohydric and polyhydric alcohols and carboxylic acid esters thereof, esters of unsaturated carboxylic acids and saturated alcohols, vinyl cyclic compounds, unsaturated ethers, unsaturated ketones, amides of unsaturated carboxylic acids, unsaturated aliphatic hydrocarbons, alkenyl halides and unsaturated nitriles; in the presence of (B) at least one oil-soluble dispersant incapable of addition polymerization, said dispersant being prepared by the reaction of a substantially saturated hydrocarbon-substituted or halohydrocarbon-substituted succinic acid or anhydride with at least one alcohol; the amount of said dispersant being sufficient to produce a stable solution or dispersion of the resulting polymer in an inert diluent at a total concentration of said composition of about 20–90% by weight.

4,194,986
POWDERED OR FLAKED WASHING COMPOSITIONS ADAPTED TO AUTOMATIC LAUNDRY MACHINES

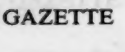
Hervé Tournier, Valleiry, and Alain Groult, Annemasse, both of France, assignors to Union Generale de Savonnerie, Marseille, France

Filed Feb. 1, 1978, Ser. No. 874,227
Claims priority, application Switzerland, Feb. 2, 1977, 1223/77
Int. Cl.[2] C11D 7/54, 7/60
U.S. Cl. 252—102 **12 Claims**

1. A detergent composition mainly for automatic laundering machines which consists essentially of, based on the weight of the total composition, at least 60% of at least one alkali or ammonium salt of a fatty acid and no more than 10% of a mixture of surfactants containing 10 to 30% of at least one non-ionic water-soluble polyoxyalkylated surfactant selected from the group consisting of a polyoxyalkylated derivative of C_8–C_{20} alcohols, a polyoxyalkylated derivative of alkyl or di-alkyl phenols, a polyxylalkylated derivative of a polyoxypropylated propylene glycol, a polyoxyalkylated derivative of a polyoxypropylated diamine and a polyoxylalkylated derivative of a fatty amide and 90 to 70% of at least one water-soluble anionic surfactant, selected from the group consisting of an α-sulfonated fatty acid ester of the formula



wherein R is a linear alkyl radical with 6–20 C atoms, R' is an alkyl radical selected from the group consisting of methyl, ethyl, propyl, butyl, hexyl and isomers thereof and ME is an alkali metal or a quaternary ion of ammonium, mono- or diethanolamine and an α-sulfonated fatty acid amide of the formula



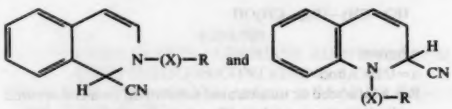
wherein R is a linear alkyl radical with 6–20 C atoms, R' is an alkyl radical selected from the group consisting of methyl, ethyl, propyl, butyl, hexyl and isomers thereof and ME is an alkali metal or a quaternary ion of ammonium, mono- or diethanolamine.

4,194,987
PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Gaylen R. Brubaker, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 26, 1978, Ser. No. 973,644
Int. Cl.[2] C11D 7/54
U.S. Cl. 252—102 **13 Claims**

7. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator therefor an N-acylcyano cyclic amino selected from the class consisting of:



I II

wherein R is a hydrocarbon radical selected from the group consisting of aliphatic of 1 to 18 carbon atoms and aromatic of the benzene and naphthalene series and X is selected from the class consisting of —C(O)— and —$S(O_2)$—, it being provided that the cyclic amine may contain a non-interfering substituent.

4,194,988
METHOD FOR THE PRODUCTION OF AQUEOUS, FINELY DISPERSED, SHELF-STABLE SILICONE OIL EMULSIONS

Wolfgang Schneider, and Kurt Niehaves, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed May 23, 1978, Ser. No. 908,751
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730923
Int. Cl.[2] B01J 13/00
U.S. Cl. 252—312 **4 Claims**

1. A method for the preparation of aqueous, finely dispersed, shelf-stable silicone oil emulsions, consisting essentially of the following steps in order:

(A) mixing with agitation at a temperature of about 20° to 150° C., dimethyl polysiloxanes and about 0.1–0.3 part by weight, based on said dimethyl polysiloxanes of an emulsifier and obtaining a clear solution;

(B) neutralizing said clear solution with a basic material selected from the group consisting of organic and alkali bases; and

(C) diluting with water; wherein said emulsifier is selected from orthophosphoric acid partial esters consisting of monoesters of orthophosphoric acid, diesters of orthophosphoric acid and mixtures thereof, prepared by the reaction of:

(a) 1-n-octanol or 1-n-octenol with P_2O_5,

(b) straight-chain primary alcohols having 6–10 carbon atoms with phosphoric acids or phosphorus halogenides, or

(c) mixtures of primary alcohols having an average molecu-

lar weight of 110 to 160, which are straight-chain to an extent of at least 50 molar percent and contain 1–22 carbon atoms, with phosphoric acids, phosphorus oxides, or phosphorus halogenides.

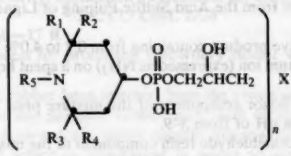
4,194,989

PIPERIDINYL HYDROGEN 2-HYDROXYALKYL PHOSPHATES AND METAL SALTS THEREOF WHICH COMPOUNDS ARE USEFUL AS ULTRAVIOLET STABILIZERS FOR ORGANIC COMPOSITIONS

Gether Irick, Jr., and Richard H. S. Wang, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,716
Int. Cl.² C09K *15/32*
U.S. Cl. 252—400 A **12 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of piperidinyl phosphate having the formula:



wherein R_1 and R_2 are each alkyl having 1–6 carbons; R_3 and R_4 are each alkyl having 1–6 carbons or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring which is unsubstituted or substituted with a methyl group; R_5 is hydrogen, oxy, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 or 4 carbon atoms, propargyl, benzyl or alkyl substituted benzyl; M is either hydrogen or a metal ion selected from the group consisting of Li, Na, K, Mg, Ca, Ba, Mn, Co, Ni, Sn, Zn, Ce, and the amount of hydrogen for M can vary from zero to 100%; X is an alkyl, alkylene, oxyalkyl or oxyalkyleneoxy having 2 to 12 carbon atoms or an aryl, arylene, oxyaryl or oxyaryleneoxy with 6, 12 or 18 carbon atoms; and n is 1 to 4.

4,194,990

CATALYST AND PROCESS FOR THE PRODUCTION OF CHLOROFLUORINATED HYDROCARBONS

Wim J. M. Pieters, Morristown; William E. Gates, Green Township, Morris County; Emery J. Carlson, Chatham, and John E. Wilkalis, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Division of Ser. No. 767,716, Feb. 11, 1977, Pat. No. 4,088,705. This application Jan. 16, 1978, Ser. No. 869,730
Int. Cl.² B01J *27/10, 27/12*
U.S. Cl. 252—441 **9 Claims**

1. A novel catalyst composition which comprises in combination at least about 60% by weight of said composition of magnesium and copper ions, each in combination with fluoride ion and at least one alkali metal in combination with chloride ion.

4,194,991

ACIDIC MULTIMETALLIC HYDROCARBON CONVERSION CATALYTIC COMPOSITE

John F. Flagg, Rosemont, and George J. Antos, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 758,285, Jan. 10, 1977, Pat. No. 4,110,199. This application Dec. 15, 1977, Ser. No. 861,045
Int. Cl.² B01J *27/08, 27/10*
U.S. Cl. 252—441 **15 Claims**

1. An acidic catalytic composite comprising a halogenated porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.1 to about 10 wt. % uranium, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available cobalt, and uranium are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the uranium is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

4,194,992

METHOD FOR THE POLYMERIZATION OF OLEFINES AND MEANS SUITABLE THERETO

Margherita Corbellini, Milan, and Alberto Greco, Dresano, both of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 763,077, Jan. 27, 1977, abandoned. This application Jul. 20, 1978, Ser. No. 926,518
Claims priority, application Italy, Jan. 30, 1976, 19748 A/76; Jul. 13, 1976, 25257 A/76
Int. Cl.² C08F *4/64, 4/68*
U.S. Cl. 252—442 **5 Claims**

1. A method for the preparation of a catalyst containing titanium trichloride or vanadium trichloride and useful in the polymerization and copolymerization of ethylene with higher alphaolefines, which comprises vaporizing another metal selected from the group consisting of Al, Mg, Cr, Mn, Fe, V and Ti under vacuum and reacting the vapors thus obtained with $TiCl_4$ or VCl_4 at a low temperature.

4,194,993

METHOD OF MANUFACTURING POWDERED CLEANING COMPOSITION

James F. Deal, III, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 13, 1978, Ser. No. 885,559
Int. Cl.² C11D *7/32, 17/06*
U.S. Cl. 252—541 **2 Claims**

1. A method of preparing a powdered cleaning composition comprising the steps of:

polymerizing urea and formaldehyde in aqueous acidic solution to form a mass of polymer particles having an average particle size between about 10 and 105 microns and an oil value of at least about 90;

neutralizing the mass of polymer particles;

centrifuging the mass of polymer particles until the moisture content of said mass of polymer particles is less than about 43, but more than 30% based on the dry weight of the polymer;

sprinkling at least about 0.2% of polyethylene oxide powder having a molecular weight of at least about 20,000 onto freshly blended surfaces of the polymer mass as it is being blended; and

spraying sufficient surfactant into the polymer mass to lower the surface tension of the moisture therein to no more than about 40 dynes per centimeter.

4,194,994

SINTERED METAL OXIDE SEMICONDUCTOR HAVING ELECTRICAL CONDUCTIVITY HIGHLY SENSITIVE TO OXYGEN PARTIAL PRESSURE

Detlef Baresel, Stuttgart; Peter Scharner, Leonberg; Gerhard Huth, Stuttgart, and Winfried Gillert, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,796

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648373

Int. Cl.[2] H01B *1/08*

U.S. Cl. 252—518 1 Claim

1. A semiconductor composition for sensors responsive to oxygen partial pressure in automotive exhaust gas with which the composition is in contact by a change in electrical conductivity, said composition consisting essentially of tin oxide doped with 0.2 to 20 mol% of an oxide selected from the group consisting of magnesium oxide and niobium pentoxide and having a conductivity characteristic which is approximately linear with respect to the oxygen content of said gas and substantially less catalytic effect on the oxidation of carbon monoxide than undoped tin oxide and which provides a change of electrical conductivity of at least one order of magnitude when the oxygen partial pressure in said gas changes by approximately one-half an order of magnitude.

4,194,995

WATER VAPOR ABSORBING AND TRANSMITTING ADHESIVE, A PROCESS FOR THE MANUFACTURE OF THIS ADHESIVE AND USE THEREOF

Walter Schermann; Arno Holst, both of Wiesbaden, and Wilhelm Fischer, Pirmasens, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,621

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736147

Int. Cl.[2] C08L *1/28, 3/08*

U.S. Cl. 260—14 5 Claims

1. In a water vapor absorbing and transmitting adhesive containing at least one organic binding agent which is insoluble in water, and an addition of at least one hydrophilic polymer, the improvement comprising that said hydrophilic polymer is a swellable modified starch ether or cellulose ether, which is modified by cross-linking effected by heat energy, or radiation, or by an additional chemical compound, which is insoluble in water to the extent of at least about 50 percent by weight, and which swells in aqueous liquids.

4,194,996

PHENOL FORMALDEHYDE COMPRESSION MOULDING COMPOSITION COMPRISING PHENOL FORMALDEHYDE-WOOD FILLER

Margarita D. Babina, Sverdlovsk; Evgeny S. Dunjushkin, Nizhny Tagil; Galina I. Popova, Sverdlovsk; Anatoly D. Sokolov, and Jury M. Smirnov, both of Moscow, all of U.S.S.R., assignors to Uralsky Lesotekhnichesky Institut, Sverdlovsk and Proizvodstvennoe Obiedinenie "Uralkhimplast", Nizhny Tagil, both of, U.S.S.R.

Filed Oct. 10, 1978, Ser. No. 949,724

Int. Cl.[2] C08L *1/02*

U.S. Cl. 260—17.2 5 Claims

1. A compression-moulding composition containing 15 to 45 parts by weight of a phenol-formaldehyde resin, 47.5 to 75 parts by weight of a filler comprising a product of the treatment of crushed wood with an aqueous solution of phenol and formaldehyde at the boiling temperature of said solution in the presence of hydrochloric acid at a weight ratio between phenol, formaldehyde, water, hydrochloric acid and crushed wood equal to 0.15–0.80:0.045–0.864:6–15:0.0435–0.1086:1 respectively, 7 to 9 parts by weight of a curing agent, i.e. hexamethylenetetramine, 0.5 to 1 part by weight of a curing accelerator selected from the group consisting of calcium oxide and magnesium oxide and 0.6 to 0.9 part by weight of a lubricant selected from the group consisting of stearin and stearates.

4,194,997

SULFITE SPENT LIQUOR-UREA FORMALDEHYDE RESIN ADHESIVE PRODUCT

Folke J. Edler, Södra Fiskebäcksvägen 202, 421 58 Västra Frölunde, Gothenburg, Sweden

Continuation-in-part of Ser. No. 738,370, Nov. 3, 1976, abandoned, which is a continuation of Ser. No. 574,515, May 5, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 899,237

Int. Cl.[2] C08L *97/00*

U.S. Cl. 260—17.5 20 Claims

1. An adhesive product comprising in substantially uncondensed admixture with each other, and in parts by weight, dry solids basis:

Urea-Formaldehyde Resin: 50–90

Spent Liquor from the Acid Sulfite Pulping of Lignocellulose: 10–50

the adhesive product containing from 0.2 to 4.0% by weight ammonium ion (expressed as NH_3) on a spent liquor solids basis,

the spent liquor component of the mixture prior to mixing having a pH of from 3–9,

the urea formaldehyde resin component of the mixture prior to mixing being characterized by a molar ratio of formaldehyde to urea of from 1.0–1.8 to 1; a pH of from 6–8; and a methylol content corresponding to a Witte number of from 1.0 to 1.8.

18. The method of making glued wood products which comprises applying to the surfaces of pieces of wood of bonding quantity of adhesive comprising in substantially uncondensed admixture with each other, and in parts by weight, dry solids basis:

Urea-Formaldehyde Resin: 50–90

Spent Liquor from the Acid Sulfite Pulping of Lignocellulose: 10–50

the adhesive containing from 0.2 to 4.0 % by weight ammonium ion (expressed as NH_3) on a spent liquor solids basis,

the sulfite liquor component of the mixture prior to mixing having a pH of from 3–9,

the urea formaldehyde resin component of the mixture prior to mixing being characterized by a molar ratio of formaldehyde to urea of from 1.0–1.8 to 1; a pH of from 6–8; and a methylol content corresponding to a Witte number of from 1.0 to 1.8 assembling and hot pressing the resulting adhesive-coated pieces of wood to form the glued wood product.

4,194,998

HIGHLY ABSORBENT POLYHYDROXY POLYMER GRAFT COPOLYMERS WITHOUT SAPONIFICATION

George F. Fanta, Peoria, Ill.; Edward I. Stout, Waco, Tex., and William M. Doane, Morton, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 748,032, Dec. 6, 1976, Pat. No. 4,134,863. This application Oct. 30, 1978, Ser. No. 955,828

Int. Cl.[2] C08L *3/02*

U.S. Cl. 260—17.4 GC 16 Claims

1. A method of preparing water-insoluble, aqueous fluid-absorbing compositions without saponification comprising the following steps:

a. graft polymerizing a nonionic acrylic monomer and an anionic sulfonic acid-substituted acrylic monomer onto a starch substrate, thereby forming an unsaponified water-insoluble graft copolymer, wherein the copolymerized nonionic monomer and anionic monomer comprise a synthetic copolymer moiety of said graft copolymer, and

the weight ratio of nonionic monomer:anionic monomer in said synthetic copolymer moiety is in the range of about 9:1 to about 1:4, and wherein the weight ratio of starch:-synthetic copolymer moiety is in the range of 3:1 to 1:3;

b. drying said unsaponified water-insoluble graft copolymer from step (a) to a moisture level in the range of about 1 to 15% water by dry weight; and

c. recovering said unsaponified graft copolymer from step (b).

4,194,999

PROCESS FOR PRODUCING POWDERY RUBBER

Takao Hayashi; Yasuhiro Sakanaka, and Akihiko Shimizu, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Company, Ltd., Yamaguchi, Japan

Filed Nov. 7, 1977, Ser. No. 849,467

Claims priority, application Japan, Dec. 13, 1976, 51/148732

Int. Cl.[2] C08L *1/28*

U.S. Cl. 260—17 R **6 Claims**

1. A process for producing a powdery rubber which comprises

mixing a rubber latex selected from the group consisting of anionic and nonionic rubber latex, with an aqueous solution of an anionic water soluble macromolecular compound which is dissociated in water to give negative charge at a ratio of 0.1 to 10 wt. % to the solid content of the rubber latex;

adjusting the pH of the mixture to an acidic condition;

adding to the aqueous solution a cationic compound selected from the group consisting of cationic polymers which are water soluble in acidic condition and cationic surfactants, which cationic compound causes a coacervation with the anionic water soluble macromolecular compound in an acidic condition, at a ratio of 0.1 to 10 wt. % to the solid content of the rubber latex thereby

separating the rubber particles from the rubber latex under the coacervation; and

adding an emulsion of a synthetic resin having a glass transition temperature higher than 30° C. to the rubber particles at a ratio of 1 to 50 wt. % (as a solid content) to a solid content of the rubber latex and

dehydrating and drying the resulting powdery rubber.

4,195,000

IMPACT MODIFIED THERMOPLASTIC COPOLYESTER

John J. Charles, Bloomingdale, and Robert C. Gasman, West Milford, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 887,755

Int. Cl.[2] C08G *63/16*; C08K *7/14*; C08L *67/02*

U.S. Cl. 260—22 D **6 Claims**

1. Molding composition comprising:

(a) at least about 30 wt% of a copolyester of dimeric fatty acid, 1,4-butanediol and terephthalic acid, which copolyester contains between about 25 and about 30 wt% based on copolyester of dimeric fatty acid selected from the group consisting of dioleic, dilinoleic and dilinolenic acids and dialkyl esters of such acids and between about 70 and about 75 wt% based on copolyester of butylene terephthalate units, said copolyester having an intrinsic viscosity between about 0.5 and about 1.2 dl/g; and

(b) between about 35 and about 45 wt% based on total molding composition of glass reinforcing fibers having diameters between about 5 and about 20 microns and aspect rations of at least about 5.

4,195,001

FORMULATIONS AND PROCESS FOR EFFECTING STOPPAGE OF LEAKS OF LIQUID FROM TANKS, PIPES AND THE LIKE

Donald B. Lytton, Lincolnwood, Ill., assignor to Lake Chemical Co., Chicago, Ill.

Continuation-in-part of Ser. No. 809,153, Jun. 23, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 930,514

Int. Cl.[2] C08L *91/06*; C09K *3/10, 3/12*

U.S. Cl. 260—28 R **20 Claims**

1. A formulation for stopping seepage or like leaks in tanks and pipes through which liquids are flowing at low pressures or through which liquids are adapted to flow, said formulation having an initial putty or putty-like consistency as prepared, and being prepared by admixing separate A and B compositions, as set forth below, each of which has a putty or putty-like consistency and comprises:

A. A normally liquid epoxide resin base and a compatible wax or waxy material;

B. A normally liquid curing agent for said normally liquid epoxide resin base of composition A, and a compatible wax or waxy material; said compatible wax or waxy material being present in an amount in relation to and in cooperation with said epoxide resin base and said curing agent, when said A and B compositions are admixed in predetermined proportions and applied to a crevice or the like through which said liquids are flowing or adapted to flow, to effect stoppage of said seepage shortly after such application and substantially prior to the curing of said epoxide resin base being completed, said amount of the wax or waxy material content of the A and B compositions constituting at least about 10%, by weight, of the total of the A and B compositions based upon the sum of the epoxide resin base, the curing agent and the wax or waxy material.

4,195,002

WATER-DISPERSIBLE COATINGS CONTAINING BORON NITRIDE FOR STEEL CASTING DIES

Schrade F. Radtke, New Canaan, Conn.; Dodd S. Carr, Newark, N.J., and Max Kronstein, Bronx, N.Y., assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,725

Int. Cl.[2] C08J *3/06*; C08L *9/04, 9/08, 67/06*

U.S. Cl. 260—29.2 E **8 Claims**

1. A process for the preparation of a dispersion composition for coating the surface of a steel casting die for molten metals, which comprises treating an aqueous dispersion of a water-dispersible film-forming polymer having a high fraction, a low polymer fraction and an unsaturated monomeric fraction with a water-soluble peroxide in an amount of from about 3 to about 7.5 parts by weight of the peroxide per 100 parts by weight of the polymer solids so as to bring about the polymerization of the unsaturated monomeric fraction and the further polymerization of the low polymer fraction without however losing the water-dispersible property of the polymer, and mixing from about 10% to about 48% by weight of boron nitride powder having a particle size less than 200 mesh with the resulting peroxide-modified aqueous dispersion containing from about 10% to about 27% by weight of the peroxide-modified polymer, the balance of the peroxide-modified aqueous dispersion being substantially water.

4,195,003

PHOSPHORUS ACID TO STABILIZE QUATERNIZED POLYACRYLAMIDE

John R. Hurlock, Hickory Hills, and Edward G. Ballweber, Glenwood, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 763,477, Jan. 28, 1977, Pat. No. 4,120,840. This application May 8, 1978, Ser. No. 904,083
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.
Int. Cl.[2] C08L *61/20*
U.S. Cl. 260—29.4 UA 4 Claims

1. A stabilized water-in-oil emulsion of a water-soluble quaternary salt of polytrimethylaminomethyl acrylamide comprising:

A. 5–70% by weight of a hydrophobic liquid;

B. 0.1–21% by weight of a water-in-oil emulsifying agent;

C. 30–95% by weight of an aqueous phase consisting of water and a water-soluble quaternary salt of polytrimethylaminomethylol acrylamide;

D. 10–50% by weight of the water-in-oil emulsion of a water-soluble quaternary salt of polytrimethylaminomethylol acrylamide, said polytrimethylaminomethylol acrylamide having a particle size of from 0.1 microns to 10 microns within the emulsion;

said water-in-oil emulsion of polytrimethylaminomethylol acrylamide being stabilized by the steps of:

E. Adding to the water-in-oil emulsion of polytrimethylaminomethylol acrylamide from 5–80 mole percent of phosphorus acid based upon the weight of the quaternary salt of polytrimethylaminomethylol acrylamide contained within the water-in-oil emulsion, said water-in-oil emulsion having a pH of from 3–5.5;

F. Heating said water-in-oil emulsion for a period of time at a temperature of from 30°–90° C. sufficient to prepare a stabilized water-in-oil emulsion of polytrimethylaminomethylol acrylamide; and then,

G. Recovering said stabilized emulsion.

4,195,004

PROCESS FOR PREPARING WATER-DISPERSIBLE RESINS

Eduard M. A. A. J. Van Acker; Petrus G. Kooijmans, and Aart de Heer, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 21, 1978, Ser. No. 962,593
Int. Cl.[2] C08L *33/14*
U.S. Cl. 260—29.6 TA 9 Claims

1. A process for the preparation of hydroxyl- and carboxyl-containing resins dispersible in water with the aid of a base which comprises reacting 100 parts by weight of a copolymer component (A) prepared by reacting (a) from 10 to 60 parts by weight of a vinyl ester of an alpha-branched, saturated, aliphatic monocarboxylic acid, (b) from 10 to 50 parts by weight of styrene or vinyl toluene, (c) from 5 to 25 parts by weight of a hydroxyalkyl ester of an alpha,beta-ethylenically unsaturated monocarboxylic acid, and (d) from 0 to 40 parts by weight of an alkyl ester of an alpha,beta-ethylenically unsaturated monocarboxylic acid with about 5 to 25 parts by weight of a component (B) prepared by reacting trimellitic anhydride and a glycidyl ester of alpha-branched, saturated, aliphatic monocarboxylic acids in the mole ratio of from about 0.8:1 to 1:1.2.

4,195,005

AQUEOUS CAN COATINGS OF IMPROVED IMPERMEABILITY

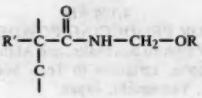
George L. Brown, Scotch Plains, and Arthur T. Spencer, New Providence, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 18, 1977, Ser. No. 852,637
Int. Cl.[2] C08L *33/02*
U.S. Cl. 260—29.6 TA 6 Claims

1. A metal container containing a beverage or food and having its internal surface coated with an adherent sanitary liner, the coating which is in contact with said food or beverage having a Staypro value of at least about 6 and being a cured layer of a water-based coating composition consisting essentially of:

(A) from about 5 percent to about 60 percent by weight of an amine-neutralized or partially neutralized interpolymer formed in the presence of a vinyl polymerization catalyst and in the absence of mercaptan, said interpolymer being comprised of:

1. from about 10 percent to about 30 percent of acrylamide or methacrylamide in units of the structure:



where R' is methyl or hydrogen and R is hydrogen or lower alkyl;

2. from about 5 percent to about 15 percent of units formed by vinyl polymerization of monoethylenically unsaturated carboxylic acid;

3. from about 10 percent to about 50 percent of units formed by vinyl polymerization of isobutylmethacrylate; and

4. from about 20 percent to about 45 percent of nitrile selected from acrylonitrile and methacrylonitrile; wherein said interpolymer is solubilized by neutralizing or partially neutralizing the acid groups of said interpolymer with a sufficient amount of monomeric amine to produce at least 0.200 milliequivalents of salt per gram of resin solids; and

(B) from about 40 percent to about 95 percent by weight of a liquid medium consisting of a mixture of water-soluble or water-miscible organic solvents and water, wherein at least 60 percent by weight of the mixture is water.

4,195,006

AQUEOUS CAN COATINGS OF IMPROVED IMPERMEABILITY

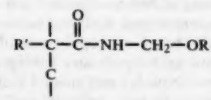
George L. Brown, Scotch Plains, and Arthur T. Spencer, New Providence, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,185
Int. Cl.[2] C08L *33/02*
U.S. Cl. 260—29.6 TA 6 Claims

1. A metal container containing a beverage or food and having its internal surface coated with an adherent sanitary liner, the coating which is in contact with said food or beverage having a Staypro value of at least about 6 and being a cured layer of a water-based coating composition consisting essentially of:

(A) from about 5 percent to about 60 percent by weight of an amine-neutralized or partially neutralized interpolymer formed in the presence of a vinyl polymerization catalyst and in the absence of mercaptan, said interpolymer being comprised of:

1. from about 10 percent to about 30 percent of acrylamide or methacrylamide in units of the structure:



where R' is methyl or hydrogen and R is hydrogen or lower alkyl;

2. from about 5 percent to about 15 percent of units formed by vinyl polymerization of monoethylenically unsaturated carboxylic acid;
3. from about 10 percent to about 30 percent of units derived by vinyl polymerization of monovinyl aromatic monomer;
4. from about 10 percent to about 30 percent of units formed by vinyl polymerization of flexibilizing monomer selected from alkyl acrylates having up to 4 carbon atoms in each alkyl group; and
5. from about 20 percent to about 45 percent of nitrile selected from acrylonitrile and methacrylonitrile; wherein said interpolymer is solubilized by neutralizing or partially neutralizing the acid groups of said interpolymer with a sufficient amount of monomeric amine to produce at least 0.200 milliequivalents of salt per gram of resin solids; and

(B) from about 40 percent to about 95 percent by weight of a liquid medium consisting of a mixture of water-soluble or water-miscible organic solvents and water, wherein at least 60 percent by weight of the mixture is water.

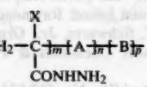
4,195,007

PROCESS FOR STABILIZING AQUEOUS SOLUTION OF ACRYLIC OR METHACRYLIC HYDRAZIDE POLYMERS

Masahiro Kobayashi, and Tadao Yabuhara, both of Tokushima, Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Sep. 8, 1978, Ser. No. 940,739
Claims priority, application Japan, Sep. 9, 1977, 52-109199
Int. Cl.[2] C08K *3/16*
U.S. Cl. 260—29.6 HN **6 Claims**

1. A process for stabilizing an aqueous solution of an acrylic or methacrylic hydrazide polymer which comprises adding hydrazine hydrate and/or a water-soluble alkaline earth metal salt of an inorganic acid to an aqueous solution of an acrylic or methacrylic hydrazide polymer having the following general formula:



wherein X is hydrogen atom or methyl group, A is acrylamide unit, an acrylate unit or a methacrylate unit, B is a monomer unit copolymerizable with acrylamide, acrylate or methacrylate, and there is the following relationship among m, n and p:

$m+n+p=100\%$ by mole
30% by mole $\leqq m \leqq 100\%$ by mole
0% by mole $\leqq n+p \leqq 70\%$ by mole

said hydrazine hydrate and/or said water-soluble alkaline earth metal salt being employed at least in an amount equal to the weight of said acrylic or methacrylic hydrazide polymer.

4,195,008

LATEX EXTENDED WITH GRAFTED MINERAL OIL

David P. Gruber, Northampton Township, Summit County, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 848,625, Nov. 4, 1977. This application Mar. 2, 1979, Ser. No. 16,992
Int. Cl.[2] C08K *5/09*
U.S. Cl. 260—29.7 H **15 Claims**

1. A rubber processing petroleum oil containing, per 100 parts by weight of said oil, graft polymerized to said oil from about 2 to 20 parts by weight of at least one ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, fumaric acid, vinyl benzoic acid, α-chloroacrylic acid, crotonic acid and itaconic acid, said oil having: (1) a pour point below about 30° C., (2) a SUS viscosity at about 38° C. of from about 40 to 27,000, (3) a molecular weight of from about 220 to 2,400, (4) a clay-gel molecular analysis of % by weight of from about 0 to 0.1 asphaltenes, from about 0.2 to 18 polar compounds, from about 10 to 80 aromatic compounds and from about 10 to 90 saturated compounds and (5) a carbon type analysis of from about 3 to 47% aromatic carbon atoms, from about 19 to 44% naphthenic carbon atoms and from about 31 to 73% paraffinic carbon atoms.

4,195,009

COATING SYSTEM

Robert A. Zimmermann, 6601 Rockbrook, St. Louis, Mo. 63133

Division of Ser. No. 576,556, May 12, 1975, Pat. No. 4,066,599. This application Nov. 14, 1977, Ser. No. 851,151
Int. Cl.[2] C08K *5/01, 5/04;* C08L *9/00, 75/04*
U.S. Cl. 260—31.2 N **2 Claims**

2. A system adapted for the application of heat refelective and moisture-proof barrier to a substrate comprising:

a first formulation containing between about 22 and about 56% by weight of a hydroxyl terminated butadiene polymer, between about 5 and about 30% by weight of a polyether triol having a hydroxyl number of between about 300 and about 500, between about 10 and about 46% by weight particulate aluminum, between about about 0.4 and about 6% by weight of a molecular sieve dessicant, between about 0.1 and about 1.5% by weight of a mercury catalyst, up to about 4% by weight of a silicone resin, and up to 40% by weight of an organic solvent selected from the group consisting of aromatic solvents, ketones, esters and glycol ethers; and

a second formulation containing a urethane prepolymer derived from a polypropylene glycol ether polyol and toluene diisocyanate containing between about 13 and about 17% by weight free isocyanate groups;

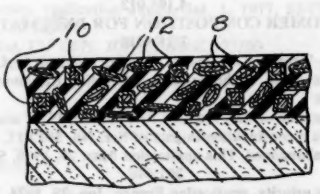
the two formulations of said system being adapted to provide a reaction mixture for application to said substrate, said system comprising defined relative proportions of said formulations so as to provide a molar ratio of at least about 1.1 isocyanate groups per hydroxyl group in said reactive mixture at the site of the substrate to be coated.

4,195,010

CERAMIC COATED QUARTZ PARTICLES

Alexander H. Russell, Owings Mills, and John L. McClinton, Hanover, both of Md., assignors to Burns & Russell Company of Baltimore City, Baltimore, Md.

Filed Jul. 6, 1977, Ser. No. 813,359
Int. Cl.[2] C08K *3/34, 9/02, 9/06*
U.S. Cl. 260—40 R **16 Claims**



1. In a decorative fade resistant cast article suitable for exterior applications comprised of a cured resinous composition of an ethylenically unsaturated polyester resin, an ethylenically unsaturated polymerizable solvent and filler particles comprising color containing inorganic ceramic coated granules or a mixture of such ceramic granules and sand particles, wherein the improvement comprises imparting a fade resistant and three-dimensional color in a translucent resin medium to impart color to the cast article by selecting and combining filler particles wherein said filler particles comprise from about 15 percent to 100 percent by weight of said granules to 85 percent

to 0 percent by weight of sand and wherein said filler particles employed to provide color to said cast article have a Tyler screen size of from about 4 mesh to 200 mesh wherein said filler particles are treated with an ethylenically unsaturated organofunctional silane in an amount sufficient to provide an environmental composition and prevent discoloration of the filler particles and resin medium of the cast article and thereafter adding said filler particles to said polymerizable polyester resin, and polymerizable solvent wherein said filler particles comprise at least 50 percent by weight of said resinous composition.

4,195,011
INJECTION MOLDING COMPOSITIONS

Robert C. Gasman, West Milford, and John J. Charles, Bloomingdale, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,548
Int. Cl.[2] C08K *3/36*
U.S. Cl. 260—40 R **20 Claims**

1. Injection molding composition comprising at least about 30 wt% PBT having an intrinsic viscosity between about 0.5 and about 2.0 dl/g and containing:

a. between about 0.5 and about 50 wt% based on total molding composition of thermally stable reinforcing fibers having diameters between about 5 and about 20 microns and aspect ratios of at least about 5, and

b. between about 5 and about 70 wt% based on total molding composition of novaculite having an average particle size between about 3 and about 5 microns, with at least 90% of such novaculite particles having a maximum particle size less than about 10 microns.

4,195,012
PROCESS FOR PREPARING 2-CHLORO-1-METHYLAMINOANTHRAQUINONE AND PLASTICS CONTAINING THE SAME

Samuel M. Gerber, Martinsville, and Robert E. Misner, Flemington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 891,369, Mar. 29, 1978, abandoned. This application Sep. 28, 1978, Ser. No. 946,685
Int. Cl.[2] C08K *5/08, 5/18*
U.S. Cl. 260—42.21 **7 Claims**

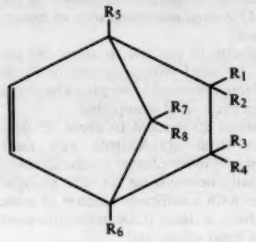
1. A thermoplastic polymer substrate of from about 50 to about 150 mils thickness containing from about 0.02 to about 0.4%, by weight, based on the weight of said substrate, of a red colorant, 2-chloro-1-methylaminoanthraquinone.

4,195,013
ELASTOMER COMPOSITION FOR PNEUMATIC TIRE TREADS

Yves de Zarauz, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation of Ser. No. 706,700, Jul. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,817, Jun. 30, 1975, abandoned. This application Mar. 29, 1978, Ser. No. 891,446
Claims priority, application France, Jun. 28, 1974, 74 22809
Int. Cl.[2] C08K *3/04*
U.S. Cl. 260—42.33 **4 Claims**

1. A pneumatic tire having a tread with an improved compromise between skid resistance and hysteresis properties, said tread comprising a sulfurvulcanized elastomeric terapolymer containing a filler such as carbon black or silica and an extension oil, said elastomeric tetrapolymer containing from about 18% to about 75% by weight of ethylene, from about 20% to about 45% by weight of an acyclic α-olefin having the formula $R\text{-}CH{=}CH_2$ wherein R represents an alkyl radical having from 1 to 8 carbon atoms, from about 2% to about 7% by weight of a nonconjugated diene and from about 5% to about 15% by weight of at least one cyclic sterically hindering unhalogenated mono-olefin monomer which is a norbornene compound having the formula



in which R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 may be hydrogen or an aliphatic, cycloaliphatic or aromatic unhalogenated hydrocarbon radical.

4,195,014
UNSATURED POLYESTER RESINS HAVING IMPROVED FIRE RETARDANCE

Edwin Dorfman, Grand Island; Raymond R. Hindersinn, Lewiston, and Willis T. Schwartz, Jr., Grand Island, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 692,624, Jun. 3, 1976, Pat. No. 4,152,368, which is a continuation-in-part of Ser. No. 490,423, Jul. 22, 1974, abandoned, Continuation-in-part of Ser. No. 726,033, Sep. 23, 1976, Pat. No. 4,148,841, which is a continuation-in-part of Ser. No. 514,984, Oct. 10, 1974, Pat. No. 3,983,185, which is a continuation-in-part of Ser. No. 490,423, Jul. 22, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 761,502
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.
Int. Cl.[2] C08K *3/08, 3/10;* C08L *67/06*
U.S. Cl. 260—45.75 R **67 Claims**

1. In a copolymerizable mixture of an unsaturated polyester composition and a copolymerizable ethylenically unsaturated monomer reactant capable of copolymerization to form a fire retardant polymer composition, said unsaturated polyester composition comprising a halogenated alpha, beta-ethylenically unsaturated polyester of a polycarboxylic compound and a polyhydric alcohol, which contains halogen in a proportion of about 4 up to about 50 weight percent, the proportion of said ethylenically unsaturated monomer to said unsaturated polyester composition being that necessary to produce on reaction of said ethylenically unsaturated monomer with said unsaturated polyester composition an infusible polyester resin, the improvement wherein said mixture contains an effective fire retardant proportion of about 0.2 to about 15 weight percent of an additive mixture consisting essentially of at least 0.1 weight percent of iron or an iron compound, at least 0.1 weight percent of a molybdenum compound and at least 0.1 weight percent of a copper or a copper compound; said proportions being based on the weight of the copolymerizable mixture.

4,195,015
HEAT AND AGING STABLE COPOLYETHERESTERAMIDES AND METHOD OF MANUFACTURING SAME

Gérard Deleens, Orsay; Bernard Guerin, Bures-sur-Yvette, and Claude Poulain, Orsay, all of France, assignors to ATO Chimie, Courbevoie, France

Continuation of Ser. No. 811,246, Jun. 29, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,848
Claims priority, application France, Jul. 30, 1976, 76 23399
Int. Cl.[2] C08K 5/18
U.S. Cl. 260—45.75 C 8 Claims

1. A thermoplastic aliphatic copolyetheresteramide based composition of high molecular weight stabilized to light, heat and oxidation comprising:

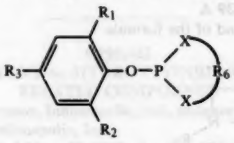
a copolyetheresteramide and 4-4'-bis-(α-α'-dimethylbenzyl)-diphenylamine in an amount of between about 0.05 and about 5% by weight of the copolyetheresteramide and between about 0.01 and about 2% by weight of a mixture of cuprous iodide and potassium iodide, the ratio by weight of said cuprous iodide to said potassium iodide being equal to between 0.1:1 and 1.9:1.

4,195,016
HINDERED PHENYL PHOSPHITES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 710,063, Jul. 30, 1976, Pat. No. 4,094,855. This application May 8, 1978, Ser. No. 904,063
Int. Cl.[2] C07F 9/15; C08K 5/49, 5/52
U.S. Cl. 260—45.85 R 12 Claims

1. A compound of the formula



wherein

R_1 and R_2 are independently lower alkyl or hydrogen, provided that only one of R_1 and R_2 is hydrogen,

R_3 is $-(A)_q-COOR_4$ or CN where

A is alkylene of 1 to 6 carbon atoms,

R_4 is alkyl of 1 to 24 carbon atoms, phenyl or alkyl substituted phenyl,

q is 0 or 1,

X is S or O, and

R_6 phenylene, alkyl substituted phenylene or alkylene.

7. A composition of matter comprising an organic polymeric material normally subject to thermal, oxidative and ultraviolet degradation stabilized with

(a) 0.005% to 5% of a stabilizing compound according to claim 1,

(b) 0 to 5% of a phenolic antioxidant,

(c) 0 to 5% of a thio co-stabilizer,

(d) 0 to 5% of a UV light protecting compound.

4,195,017
MALIGNIN, DERIVED FROM BRAIN TUMOR CELLS, COMPLEXES AND POLYPEPTIDES THEREOF

Samuel Bogoch, 46 E. 91st St., New York, N.Y. 10028

Continuation of Ser. No. 553,075, Feb. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 550,432, Feb. 18, 1975, Ser. No. 450,404, Mar. 12, 1974, and Ser. No. 385,451, Aug. 3, 1973. This application Nov. 17, 1977, Ser. No. 852,198
Int. Cl.[2] A61K 39/00; C07C 103/52; C07G 7/00
U.S. Cl. 260—112 R 11 Claims

1. A product, Malignin, derived from brain tumor cells, which forms a single line precipitate with its specific antibody in quantitative precipitin tests and in Ouchterlony gel diffusion tests, is soluble in water and aqueous solutions having an acid or neutral pH, and insoluble at an alkaline pH, and has a spectrophotometric absorption peak wave length of 280 mμ, a molecular weight of about 10,000 and an amino acid composition approximately as follows:

	Approx. No. of Residues
Aspartic Acid	9
Threonine	5
Serine	5
Glutamic Acid	13
Proline	4
Glycine	6
Alanine	7
Valine	6
½ Cystine	1
Methionine	2
Isoleucine	4
Leucine	8
Tyrosine	3
Phenylalanine	3
Lysine	6
Histidine	2
Arginine	5
Approximate Total	89

the amino acids cysteic, hydroxyproline, norleucine, ammonia, isodesmosine, hydroxylysine, lysinonorleucine and gamma-aminobutyric acid being absent in detectable amounts.

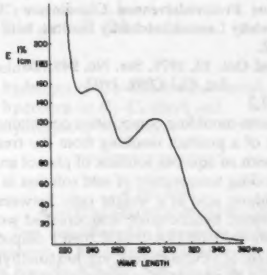
2. The antibody, Anti-Malignin, prepared in a mammal in response to the product, Malignin, of claim 1.

7. Polypeptides having the physicochemical specificities of the product of claim 1 and derived therefrom by sequential cleavage of units of approximately a molecular weight of 200 down to a molecular weight of approximately 5000.

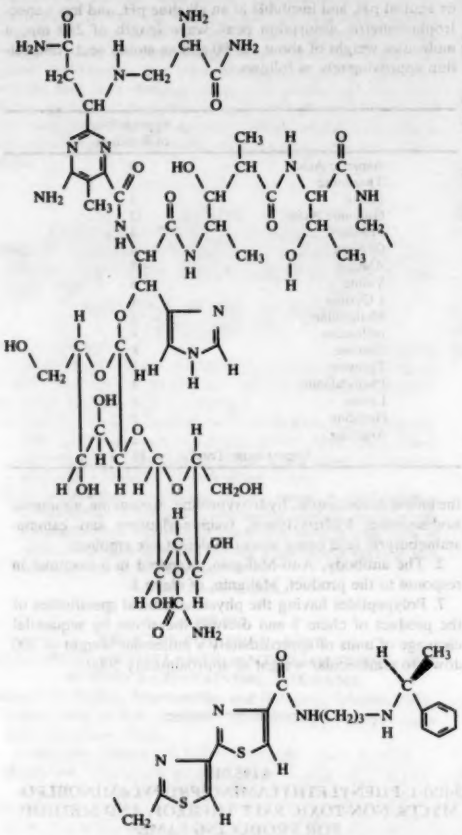
4,195,018
3-[(S)-1'-PHENYLETHYLAMINO]PROPYLAMINOBLEOMYCIN, NON-TOXIC SALT THEREOF, AND METHOD FOR PRODUCING SAME

Tomohisa Takita, Asaka; Akio Fujii, Kamakura; Takeyo Fukuoka, Tokyo; Yasuhiko Muraoka, Kitamoto; Osamu Yoshioka, Yono, and Hamao Umezawa, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1978, Ser. No. 915,805
Claims priority, application Japan, Jul. 1, 1977, 52-77770; Oct. 14, 1977, 52-122485
Int. Cl.[2] C07C 103/52; A61K 37/100
U.S. Cl. 260—112.5 R 2 Claims



1. 3-[(S)-1'-Phenylethylamino]propylaminobleomycin represented by the formula



substantially free from the (R) stereoisomer and a non-toxic salt thereof.

4,195,019

WOOD AND PHENOL-FORMALDEHYDE COMPRESSION-MOULDING COMPOSITION AND METHOD FOR PREPARING THE SAME

Margarita D. Babina; Anna P. Gabets; Ida I. Pereskokova, and Galina I. Popova, all of Sverdlovsk, U.S.S.R., assignors to Nizhnetagilskoe Proizvodstvennoe Obiedinenie "Uralkhimplast" and Uralsky Lesotekhnichesky Institut, both of Sverdlovsk, U.S.S.R.

Filed Oct. 10, 1978, Ser. No. 949,726
Int. Cl.[2] C08L *1/02*
U.S. Cl. 260—17.2 **6 Claims**

1. A compression-moulding composition containing 95 to 98 parts by weight of a product resulting from the treatment of crushed wood with an aqueous solution of phenol and formaldehyde at the boiling temperature of said solution in the presence of hydrochloric acid at a weight ratio between phenol, formaldehyde, water, hydrochloric acid, crushed wood equal to 0.15–0.40:0.048–0.27:10–15:0.0724–0.1086:1 respectively, 1 to 3 parts by weight of a curing agent, viz. hexamethylenetetramine, 0.5 to 1 part by weight of a curing accelerator selected from the group consisting of calcium oxide and magnesium oxide and 0.5 to 1 part by weight of a lubricant selected from the group consisting of stearin, oleic acid and stearates.

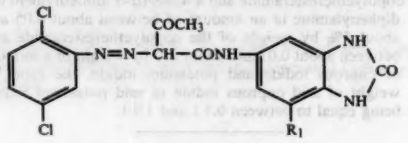
4,195,020

DICHLORO-PHENYL-AZO-ACETOACETYLAMINO-BENZIMIDAZOLONE PIGMENTS

Klaus Hunger, Kelkheim, and Joachim Ribka, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 703,243, Jul. 7, 1976, abandoned, which is a continuation of Ser. No. 507,617, Sep. 19, 1974, abandoned. This application Feb. 23, 1979, Ser. No. 15,603
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1973, 2347532
Int. Cl.[2] C09B *29/36*
U.S. Cl. 260—157 **4 Claims**

1. A mono azo pigment of the formula



wherein R_1 is hydrogen, chlorine or methyl.

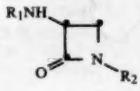
4,195,021

1,3-DISUBSTITUTED 2-AZETIDINONE ANTIBITOTICS

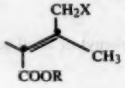
David K. Herron, Indianapolis, and Celia A. Whitesitt, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 26, 1977, Ser. No. 845,766
Int. Cl.[2] C07D *205/08;* A61K *31/395*
U.S. Cl. 260—239 A **14 Claims**

1. A compound of the formula



wherein R_2 is a group of the formula



wherein R is a hydrogen or a carboxylic acid ester protecting group and

X is chloro, bromo, C_1–C_3 acyloxy, hydroxy, C_1–C_4 alkoxy, benzyloxy, or a group of the formula

$$-SR_3$$

wherein R_3 is C_1–C_4 alkyl, or phenyl, and

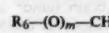
wherein R_1 is hydrogen or an acyl group of the formula

wherein R_5 is

(a) hydrogen, C_1–C_4 alkyl, halomethyl or phenyl;

(b) benzyloxy, 4-nitrobenzyloxy, 2,2,2-trichloroethoxy, tert-butoxy, or 4-methoxybenzyloxy;

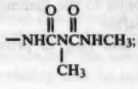
(c) an arylalkyl group of the formula



wherein m is 0 or 1 and R_6 is 1,4-cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 substituents independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_1–C_4 alkyl and C_1–C_4 alkoxy;

(d) a substituted arylalkyl group of the formula

wherein R_7 is R_6 as defined above, 2-thienyl or 3-thienyl and W is hydroxy, protected hydroxy, carboxy, protected carboxy, amino, protected amino or a group of the formula



(e) a heteroaryl methyl group of the formula

wherein R_8 is 2-thienyl, 3-thienyl, 2-furyl, 2-thiazolyl, 5-tetrazolyl, 1-tetrazolyl or 4-isoxazolyl,

and when R_1 is hydrogen, the hydrochloride acid addition salts of the amines represented thereby, and when R is hydrogen the pharmaceutically acceptable salts of the acids represented thereby.

4,195,022

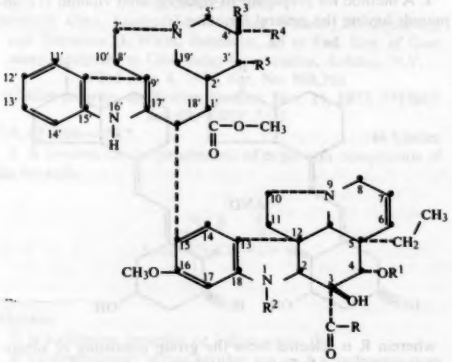
4-DESACETOXY-4α-HYDROXYVINBLASTINE AND RELATED COMPOUNDS

Gerald L. Thompson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 27, 1978, Ser. No. 890,422
Int. Cl.² C07D *519/04*
U.S. Cl. 260—244.4 **6 Claims**

1. An indole-dihydroindole of the formula

II



wherein R is OCH_3 or NH—NH_2, R^1 is H or acetyl, R^2 is CH_3 or CHO, and, when taken singly, R^5 is H and one of R^3 and R^4 is OH or H and the other is C_2H_5 and when R^4 and R^5 are taken together, they form an α-epoxide ring and R^3 is C_2H_5, with the proviso that, when R is NH—NH_2, R^1 is H, and pharmaceutically acceptable acid addition salts thereof.

4,195,023

2-(2-FUROYL)1,2-BENZISOTHIAZOLE-3-ONE, 2-(2-FUROYL) SACCHARIN, AND 2-(2-THENOYL) SACCHARIN

Dennis Mulvey, Milford; Howard Jones, Holmdel, and Morris Zimmerman, Watchung, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 20, 1975, Ser. No. 606,271
Int. Cl.² C07D *275/06*
U.S. Cl. 548—209 **3 Claims**

1. 2-(2-Furoyl)-1,2-benzoisothiazoline-3-one.

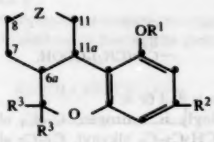
4,195,024

BENZOCYCLOHEPTAPYRANS, COMPOSITIONS, AND METHOD OF TREATMENT

Robert A. Archer, Indianapolis, Ind., and Moses W. McMillan, Vicksburg, Mich., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 884,883, Mar. 9, 1978, Pat. No. 4,152,451.
This application Jan. 29, 1979, Ser. No. 7,116
Int. Cl.² C07D *311/94*
U.S. Cl. 260—345.3 **17 Claims**

1. A compound having the formula



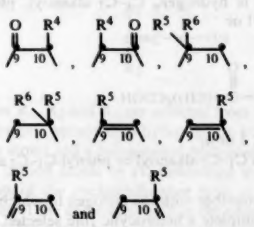
wherein:

R^1 is hydrogen or C_1–C_4 alkanoyl;

R^2 is C_5–C_{10} alkyl or C_5–C_{10} alkenyl;

R^3 is hydrogen or methyl; and

Z is selected from the group consisting of



wherein:

R^4 is hydrogen or C_1–C_4 alkoxycarbonyl;

R^5 is hydrogen or C_1–C_4 alkyl; and

R^6 is hydrogen or hydroxy.

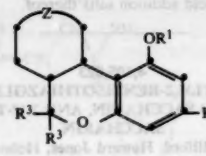
4,195,025

9-AMINO-DIBENZOPYRANS

William A. Day, and Edward R. Lavagnino, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 878,844, Feb. 17, 1978, Pat. No. 4,152,450.
This application Jan. 29, 1979, Ser. No. 6,982
Int. Cl.² C07D *311/80, 295/08*
U.S. Cl. 260—345.3 **24 Claims**

1. A compound having the general formula



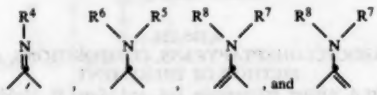
wherein:

R^1 is hydrogen or C_1–C_4 alkanoyl;

R^2 is C_5–C_{10} alkyl or C_5–C_{10} alkenyl;

R^3 is hydrogen or methyl; and

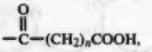
Z is selected from the group consisting of



wherein:

R^4 is hydroxy, C_1–C_4 alkoxy, or C_1–C_7 alkanoyloxy;

R^5 taken singly is hydrogen, hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkyl, CH_2C_2–C_4 alkenyl, CH_2C_2–C_4 alkynyl, C_1–C_7 alkanoyl, C_1–C_7 alkanoyloxy, phenyl-C_1–C_2 alkyl, phenyl-C_1–C_2 alkanoyl, $-(CH_2)_n-OH$, $-(CH_2)_n'O-C_1$–C_2 alkanoyl,

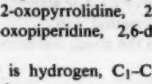


wherein n is 2, 3 or 4;

R^6 taken singly is hydrogen, C_1–C_4 alkyl, CH_2C_2–C_4 alkenyl, CH_2C_2–C_4 alkynyl, C_1–C_7 alkanoyl, phenyl-C_1–C_2 alkyl or phenyl-C_1–C_2 alkanoyl;

R_5 and R_6 taken together with the nitrogen to which they are attached complete a heterocyclic ring selected from pyrrolidine, 2-oxopyrrolidine, 2,5-dioxopyrrolidine, piperidine, 2-oxopiperidine, 2,6-dioxopiperidine and morpholine;

R^7 taken singly is hydrogen, C_1–C_7 alkanoyl, phenyl-C_1–C_2 alkanoyl or



wherein n is 2, 3 or 4;

R^8 taken singly is C_1–C_7 alkanoyl or phenyl-C_1–C_2 alkanoyl;

R^7 and R^8 taken together with the nitrogen to which they are attached complete a heterocylic ring selected from 2-oxopyrrolidine, 2,5-dioxopyrrolidine, 2-oxopiperidine and 2,6-dioxopiperidine;

and the non-toxic pharmaceutically acceptable acid addition salts and quaternary ammonium salts thereof.

4,195,026

SUBSTITUTED FURANS FROM BUTENOLIDES

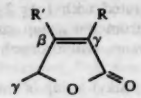
George A. Kraus, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 4, 1978, Ser. No. 966,268

Int. Cl.[2] **C07D** *307/36, 307/58*

U.S. Cl. 260—346.11 **12 Claims**

1. A method of preparing gamma position substituted furans from a butenolide comprising, reacting a butenolide of the formula:



wherein R and R′ are selected from the group consisting of hydrogen and non-functionally substituted alkyls, alkenyls, alkynyls and aryls with a trialkyl chlorosilane alkylating agent in the presence of a strong organic base and a suitable organic solvent for said base to provide a silane moiety alkylated furan ring containing intermediate; and thereafter

reacting said furan ring containing intermediate, under metallating conditions, with an organic electrophile to provide addition of said electrophile to the gamma position of said furan ring; and thereafter

removing the silane moiety from said ring to provide a gamma substituted furan.

4,195,027

PROCESS FOR PREPARING 1α-HYDROXYLATED COMPOUNDS

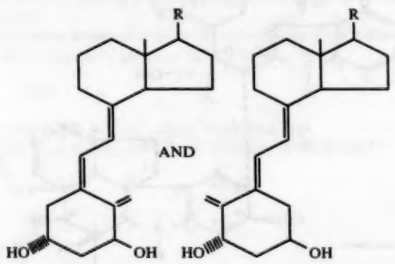
Hector F. DeLuca; Heinrich K. Schnoes; David E. Hamer, and Herbert E. Paaren, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 869,448, Jan. 16, 1978, abandoned. This application Jun. 12, 1978, Ser. No. 914,796

Int. Cl.[2] **C07J** *9/00*

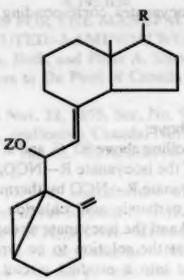
U.S. Cl. 260—397.2 **65 Claims**

1. A method for preparing 1α-hydroxylated vitamin D compounds having the general formulae



wherein R is selected from the group consisting of substituted or unsubstituted, or saturated or unsaturated, or unsaturated and substituted cholesterol side chain groups, or where R may have the structure of the side chain of cholenic acid, or of homocholenic acid, or of 27-nor-25-ketocholesterol, or of 24-ketocholesterol,

which comprises subjecting compounds having the general formula



wherein R is defined as above and Z is selected from the group consisting of hydrogen, lower alkyl, lower acyl and aromatic acyl to allylic oxidation with selenium dioxide, recovering the corresponding 1α-hydroxy compound, acylating said 1α-hydroxy compound to form the 1α-O-acyl derivative, subjecting said derivative to acid catalyzed solvolysis, whereby the 5,6-cis and 5,6-trans-1α-O-acyl vitamin D compounds are produced in admixture, and removing the acyl groups from said compounds by hydrolysis or hydride reduction.

4,195,028

GRANULAR FLOCCULANTS AND THEIR MANUFACTURE

Wataru Agui, Tokyo; Nobuyuki Higosaki, Kiyose; Koichiro Yamanari; Toshio Furukawa, both of Tokyo, and Hiroshi Kuyama, Urawa, all of Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 27, 1978, Ser. No. 872,963
Claims priority, application Japan, Jan. 31, 1977, 52-8801
Int. Cl.[2] C08K *3/34*
U.S. Cl. 260—42.43 **4 Claims**

1. A granular flocculant comprising one part by weight of high-molecular-weight polyvinylimidazoline flocculant and from about 0.05 to about 1.0 part by weight of water-insoluble, siliceous binder.

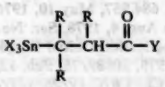
4,195,029

PROCESS FOR PRODUCING ORGANOTIN COMPOUNDS

Eberhard Otto, Lindenfels; Wolfgang Wehner, Zwingenberg, and Hermann O. Wirth, Bensheim, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,761
Claims priority, application Sweden, Nov. 14, 1977, 7713867
Int. Cl.[2] C07F *7/22*
U.S. Cl. 260—429.7 **16 Claims**

1. A process for the production of organotin compounds of the formula



wherein

X is a chlorine, bromine or iodine atom, the

R's independently of one another are each a hydrogen atom or alkyl,

Y is OH, NH_2 or OR' in which R' is a hydrocarbon group of aliphatic, cycloaliphatic or aromatic character, or said group substituted by a hydroxyl, mercapto, alkoxy, alkylthio, carboxyl or carboalkoxy grup, which comprises reacting, at −30° C. to +100° C., a tin dihalide with hydrogen chloride, hydrogen bromide or hydrogen iodine and an unsaturated nitrile of the formula

in a reactant medium selected from the group consisting of water, aqueous hydrochloric acid, water and alcohol, carboxylic acid, and alcohol with the proviso that when the reactant medium is alcohol the molar ratio of alcohol to nitrile is at least about 6:1.

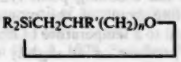
4,195,030

PREPARATION OF MONOMERIC ORGANOSILICON ESTERS

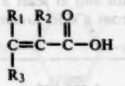
William G. Deichert, Macedon, N.Y.; Kai C. Su, Arlington, Tex., and Martin F. Van Buren, Webster, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jan. 10, 1979, Ser. No. 2,284
Int. Cl.[2] C07F *7/08*
U.S. Cl. 260—448.2 E **17 Claims**

1. A process for producing a monomeric organosilicon ester by reacting a cyclosilalkoxane having the general formula



wherein R is a monovalent hydrocarbon radical free of aliphatic unsaturation, R' is selected from the group consisting of H and CH_3 and n is an integral of from 1 to 2 inclusive with a free radical polymerizable monocarboxylic acid having the general formula



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, monovalent hydrocarbon containing from 1 to 6 carbon atoms and a halogenated hydrocarbon containing from 1 to 6 carbon atoms by (1) contacting at least stoichiometric amounts of the cyclosilalkoxane with at least stoichiometric amounts of the carboxylic acid in the presence of from at least about 25.0 percent by weight, based on the total weight of the solution, of a solvent which forms an azeotrope with water and from about 0.01 percent to about 1.0 percent by weight, based on the total weight of the solution, of a free radical polymerization preventing inhibitor, from about 0.1% to about 3.0% by weight, based on the total weight of the solution, of a protonating catalytic acid, (2) heating said solution of step (1) to a temperature of from about 70° C. to about 135° C. for about 3 hours to about 6 hours while supplying a sufficient amount of air to maintain inhibitor activation, and (3) during the reaction continuously removing from the solution by azeotropic distillation water which is produced by the reaction thereby forming a free radical polymerizable monomeric unsaturated organosilicon ester without polymerizing either the free radical polymerizable monocarboxylic acid or the free radical polymerizable monomeric unsaturated organosilicon ester.

4,195,031

PROCESS FOR THE CONTINUOUS PRODUCTION OF MONOISOCYANATES

Wolfgang Reichmann, Duesseldorf; Klaus König, Leverkusen, and Johannes Koster, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 965,648

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756928

Int. Cl.[2] C07C *118/00*

U.S. Cl. 260—453 P 6 Claims

1. A process for the continuous production of monoisocyanates corresponding to the formula

R—NCO

in which

R represents an aliphatic hydrocarbon radical containing 1 to 3 carbon atoms, comprising thermally decomposing the corresponding N-alkylcarbamic acid aryl esters corresponding to the formula

R—NH—CO—O—R'

in which

R has the meaning above and

R' represents a radical of the type obtained by removing the hydroxyl group from a monophenol having a boiling point below 250° C. at normal pressure, and separating the decomposition products by decomposition, further characterized in that

(a) a solution of the N-alkylcarbamic acid aryl ester in an organic solvent, which solvent is inert under the reaction conditions and has a boiling point lying at least 20° C. above the boiling point of the monoisocyanate to be formed, is heated to a temperature of from 160° C. to 250° C. at normal pressure or at slightly reduced pressure within the range of 200 to 1013 mbar, thereby resulting in the decomposition of the ester into the corresponding monoisocyanate and the corresponding phenol, as well as the evaporation of the solvent and the decomposition products, and

(b) the vapors formed are fed into a distillation column with the monoisocyanate obtained at the head of the column and with the phenol and at least a major portion of the solvent obtained from a side stream or from several side streams.

4,195,032

PROCESS FOR CONTINUOUSLY WORKING UP SOLUTIONS OF THE TYPE ACCUMULATING IN THE PHOSGENATION OF MONOAMINES

Johannes Koster; Peter Heitkämper; Peter Fuhrmann, and Helmut Porkert, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,650

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806214

Int. Cl.[2] C07C *118/00, 118/02*

U.S. Cl. 260—453 PH 4 Claims

1. A process for continuously working up solutions of the type which accumulate during the phosgenation of monoamines corresponding to the following general formula:

R—NH_2 ps

wherein

R represents an alkyl radical containing from 1 to 3 carbon atoms which may be unsaturated; and which solutions consist essentially of carbamic acid chlorides corresponding to the following general formula:

R—NH—CO—Cl,

optionally monoisocyanates corresponding to the following general formula:

R—NCO,

wherein

R is defined as above;

and inert solvents boiling above 80° C. and at least 10° C. above the boiling point of the isocyanate R—NCO, with recovery of the pure monoisocyanate R—NCO by thermally decomposing the corresponding carbamic acid chloride and distilling the isocyanate obtained and the isocyanate already present, if any, characterized in that the solution to be worked up is introduced to any point into a product circuit which has been established

(a) by introducing a solution consisting essentially of the monoisocyanate to be recovered, the carbamic acid chloride to be decomposed and the above-mentioned solvent into a distillation column, in whose head the pure monoisocyanate and in whose sump the solvent, which may be contaminated, accumulate, at a point situated above the column sump;

(b) by removing from the column, at a point situated above the inlet mentioned in (a), a liquid product stream consisting essentially of a concentrated carbamic acid chloride solution, optionally containing monoisocyanate, in the above-mentioned solvents, and combining this product stream with at least part of the sump product obtained in accordance with (a);

(c) by introducing the combined streams obtained in accordance with (b) into a reaction vessel provided with a reflux condenser, or by effecting the combination mentioned in (b) within the above-mentioned reaction vessel, provision being made by heating the streams before and/or after their combination or before and/or after their introduction into the reaction vessel, to ensure that the liquid phase is at least partly evaporated with at least a partial decomposition of the carbamic acid chloride into monoisocyanate and hydrogen chloride; and

(d) by allowing the hydrogen chloride formed to escape as a gas above the reflux condenser and, at the same time, returning at least part of the condensate forming in the reflux condenser to the beginning of the circuit according to (a) as the solution to be introduced into the distillation column in accordance with (a), solvent, which may be contaminated, being continuously removed at the same time as a liquid from the reaction vessel mentioned in (c).

4,195,033

1-ACETYL OR 1-CYANO-2(2,2-DICHLOROVINYL)-3,3-DIMETHYL CYCLOPROPANE

Nazim Punja, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

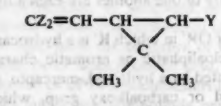
Division of Ser. No. 684,957, May 10, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 931,297

Claims priority, application United Kingdom, May 16, 1975, 20887/75; May 16, 1975, 20889/75; Feb. 12, 1976, 5599/76

Int. Cl.[2] C07C *49/26, 121/46*

U.S. Cl. 260—464 3 Claims

1. A compound of the formula:



wherein Y is acetyl or cyano, and Z is chlorine.

4,195,034

PROCESS FOR THE MANUFACTURE OF N-(SUBSTITUTED)-3-AMINOACRYLONITRILES

Murray K. Phibbs, Bath, and Peter A. Sipos, Kingston, both of Canada, assignors to Du Pont of Canada Limited, Montreal, Canada

Filed Nov. 22, 1978, Ser. No. 963,082
Claims priority, application Canada, Nov. 25, 1977, 291729
Int. Cl.[2] C07C *120/00*
U.S. Cl. 260—465 E 8 Claims

1. A process for the manufacture of N-(substituted)-3-aminoacrylonitriles of the formula N-(R_1R_2)—CH=CH—CN where R_1 is alkyl, $—(CH_2)_n—NH—CH=CH—CN$, phenyl or phenyl substituted with alkyl and/or $—NH_2$ groups, and R_2 is hydrogen or alkyl with the proviso that when R_1 is $—(CH_2)_n—NH—CH=CH—CN$ R_2 is hyrdogen, n being 1 to 8, said process comprising the step of:

(a) contacting cyanoacetylene with an amine selected from the group consisting of (i) NHR_1R_2, where R_1 is alkyl, phenyl or phenyl substituted with alkyl and/or $—NH_2$ groups and R_2 is as above, and (ii) $NH_2—(CH_2)_n—NH_2$, where n is 1 to 8, in the presence of an inert atmosphere and at a temperature below the boiling point of cyanoacetylene and of said amine, said temperature being not greater than 40° C., with the proviso that when R_1 is alkyl or $—(CH_2)_n—NH—CH—CH=CH—CN$ the temperature is not greater than 30° C., and

(b) recovering the N-(R_1R_2)-3-aminoacrylonitrile so obtained at a temperature of not greater than 50° C.

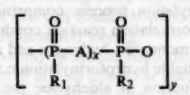
4,195,035

ALKANE-BISALKYL-PHOSPHINIC ANHYDRIDES AND PROCESS FOR THE MANUFACTURE OF ALKANE-PHOSPHONIC ANHYDRIDES AND ALKANE-BIS ALKYL-PHOSPHINIC ANHYDRIDES

Hans-Jerg Kleiner, Kronberg, and Walter Dursch, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

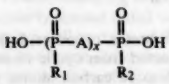
Filed Mar. 12, 1979, Ser. No. 19,786
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811628
Int. Cl.[2] C07F *9/30*
U.S. Cl. 260—545 P 3 Claims

1. A process for the manufacture of alkane-phosphonic anhydrides and alkane-bisalkyl-phosphinic anhydrides of the formula II



II

in which R_1 and R_2 are alkyl having from 1 to 20 carbon atoms, A is alkylene having from 1 to 20 carbon atoms, x is zero or 1 and y is an integer equal to or greater than 1, which comprises heating to 250° to 450° C. an alkane-phosphonic acid or alkane-bisalkyl-phosphinic acid of the formula III



III

in which R_1, R_2 and x have the aforesaid meaning, under reduced pressure and with splitting off of water.

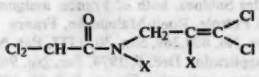
4,195,036

DICHLOROACETAMIDES WHICH ARE ANTIDOTES FOR PROTECTING MAIZE AGAINST THE TOXIC ACTION OF HERBICIDAL ESTERS OF N,N-DISUBSTITUTED GLYCINES, METHODS FOR PREPARING THE ANTIDOTES, AND COMPOSITIONS COMPRISING THEM

Franco Gozzo, S. Donato Milanese; Luigi Abbruzzese, Milan, and Giorgio Siddi, S. Donato Milanese, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 28, 1977, Ser. No. 846,351
Claims priority, application Italy, Oct. 29, 1976, 28867 A/76
Int. Cl.[2] C07C *103/27*
U.S. Cl. 260—561 HL 3 Claims

1. A dichloroacetamide having the general formula



in which

X is H or chlorine; and

R is H, an alkyl having from 1 to 5 carbon atoms, or an alkenyl having from 2 to 5 carbon atoms.

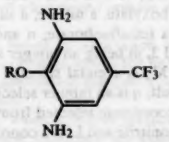
4,195,037

4-ALKOXY-3,5-DIAMINO-α,α,α-TRIFLUOROMETHYLBENZENE AND MANUFACTURE THEREOF AND HARDENER FOR POLYURETHANE ELASTOMER THEREOF

Takao Harada; Nobuhide Wada, both of Shizuoka; Hideaki Ohashi, Fujieda; Wataro Koike, Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,348
Claims priority, application Japan, Dec. 21, 1977, 52-154193
Int. Cl.[2] C07C *93/08*
U.S. Cl. 260—575 2 Claims

1. 4-Alkoxy-3,5-diamino-α,α,α-trifluoromethylbenzene having the formula



wherein R represents a C_1–C_8 alkyl group.

4,195,038

PREPARATION OF 3-BROMO-2-HYDROXY-4,4,5,5-TETRAMETHYLCYCLOPENTA-2-ENONE

Yunn H. Chiang, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 796,011, May 11, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 938,939
Int. Cl.[2] C07C *45/00*
U.S. Cl. 260—586 C 9 Claims

1. A process for the preparation of 3-bromo-2-hydroxy-4,4,5,5-tetramethyl cyclopenta-2-enone which comprises the sequential steps of:

(a) reacting bromine with at least about twenty-five moles of 2,6-dimethyl-2,5-heptadiene-4-one in a molecular equivalent ratio of about two to one in a suitable solvent at a temperature below about −20° C. whereby 2,3,5,6-tetrabromo-2,6-dimethyl-4-heptanone is formed in solution,

(b) adding to said solution a dehydrobromination agent in an

amount sufficient to dehydrobrominate said 2,3,5,6-tetrabromo-2,6-dimethyl-4-heptanone to 3,5-dibromo-2,6-dimethyl-2,5-heptadiene-4-one, and

(c) adding said 3,5-dibromo-2,6-dimethyl-2,5-heptadiene-4-one to an amount of a very strong protic acid equivalent to the amount of said 2,6-dimethyl-2,5-heptadiene-4-one reacted with said bromine, at such a rate as to keep the temperature of the reaction mixture below 20° C.

4,195,039
HETEROGENEOUS PHASE OXIDATION OF OLEFINS TO KETONES

Hubert Mimoun, Rueil Malmaison, and Robert Charpentier, Villeneuve les Sablons, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 838,269, Sep. 30, 1977, Pat. No. 4,155,879. This application Dec. 5, 1978, Ser. No. 966,847

Claims priority, application France, Sep. 30, 1976, 76 29728

Int. Cl.[2] C07C *27/12, 45/04*

U.S. Cl. 260—597 R **8 Claims**

1. A process for oxidizing olefins to carbonyl derivatives in heterogeneous phase, by means of a gas containing molecular oxygen, said olefins containing from 2 to 16 carbon atoms per molecule and having the general formula $R_1—CH=CH—R_2$ wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl and aralkyl, or form together a bivalent radical, said process being conducted in the presence of a catalyst prepared according to a process consisting essentially of the steps of impregnating a carrier with a substantially non-aqueous solution having not more than 1% by weight of water, consisting essentially of an organic impregnating solvent having dissolved therein at least two components [A] and [B] of the general formula:

$$[A]=M_1X_nL_m$$

$$[B]=M_2Z_pL'_q$$

the molar ratio of [B]: [A] being 1:1 to 20:1, wherein M_1 is rhodium or palladium; X and Z are each an anionic group selected from a carboxylate, a nitrate, a sulfate, a perchlorate, a thiocyanate and a tetrafluoborate; n and p are integers selected from 1, 2 and 3, m being an integer selected from 1, 2, 3 and 6 or being O; M_2 is a metal selected from iron, copper, manganese and cobalt; q is an integer selected from 1 to 6 or is equal to O; L is a coordinate selected from water, an olefin, a polyolefin and benzonitrile and L' is a coordinate selected from water, dimethylformamide, hexamethylphosphorotriamide and dimethylsulfoxide and 1 to 40 moles of at least one halogen containing compound per rhodium or palladium atom, said halogen-containing compound being halogen, a halohydric acid, a lithium, sodium or ammonium chloride, carbon tetrachloride, chloroform or methylene chloride; and drying the resultant catalyst at a temperature not higher than 150° C.

4,195,040
PROCESS FOR PREPARING A METHYL-SUBSTITUTED BENZALDEHYDE

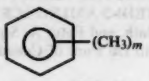
Carl A. Renner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 8, 1979, Ser. No. 1,930

Int. Cl.[2] C07C *45/02*

U.S. Cl. 260—599 **4 Claims**

1. Improved formylation process for preparing a methyl-substituted benzaldehyde by contacting and reacting, in a reaction mixture, at a temperature within the range about 0° to 120° C., the compound of the formula



wherein m is 2, 3, 4 or 5, carbon monoxide, hydrogen chloride and aluminum chloride catalyst, with the methyl-substituted benzaldehyde thus produced being separated from the reaction mixture and recovered, the improvement characterized in that the formylation reaction is carried out in the reaction mixture in the presence of chlorobenzene as a solvent.

4,195,041
PROCESS FOR PRODUCING P-HYDROXYBENZALDEHYDE

Masao Kawamura, Akashi; Tadaaki Nishi, Kakogawa; Kunioki Kato, Akashi; Hiroshi Mizokami, Kakogawa, and Tadashi Kanazawa, Hyogo, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Hyogo, Japan

Filed Aug. 30, 1978, Ser. No. 938,125

Claims priority, application Japan, Sep. 7, 1977, 52-108084; Sep. 7, 1977, 52-108085; Sep. 8, 1977, 52-108552; Oct. 3, 1977, 52-119355

Int. Cl.[2] C07C *45/00*

U.S. Cl. 260—600 R **13 Claims**

1. A process for producing p-hydroxybenzaldehyde through p-aminobenzaldehyde from p-nitrotoluene comprising the steps of:

reacting p-nitrotoluene with sodium polysulphide in a mixed solvent consisting of at least one alcohol and an alkali aqueous solution in the presence of an aprotic polar compound to produce p-aminobenzaldehyde,

adding the thus produced p-aminobenzaldehyde to an aqueous solution of sulphuric acid at 60°–100° C. to produce the sulphate thereof rapidly,

diazotizing, after cooling, the thus produced sulphate to produce a diazonium salt of p-aminobenzaldehyde, and

hydrolyzing the thus produced diazonium salt at 70°–100° C. thereby to produce p-hydroxybenzaldehyde.

4,195,042
RHODIUM HYDROFORMYLATION CATALYST

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 376,519, Jul. 5, 1973, Pat. No. 3,956,177, which is a continuation-in-part of Ser. No. 173,689, Aug. 20, 1971, abandoned. This application Mar. 2, 1976, Ser. No. 663,004

Int. Cl.[2] C07C *45/08*

U.S. Cl. 260—604 HF **46 Claims**

1. In a hydroformylation process comprising contacting under suitable hydroformulation reaction conditions a hydrocarbon olefin, carbon monoxide, hydrogen and a hydroformylation catalyst, said suitable hydroformylation conditions being suitable for the production of aldehydes; the improvement comprising said catalyst having been prepared by combining, under suitable conditions for forming an intimate mixture effective as a hydroformylation catalyst, an organorhodium halide with a reducing agent in the presence of a phosphorus containing adjuvant;

said organorhodium halide being defined by the structure

$$(L)_nRh(X)_m$$

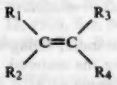
wherein X is chlorine, bromine, or iodine; L is an unsaturated hydrocarbon group selected from cyclic dienes or cyclic trienes containing from 6 to 16 carbon atoms, n represents an integer of from 1 to 2, m represents an integer of from 1 to 2, and the sum of n plus m is equal to 2 or 3;

said reducing agent being selected from the group consisting

of hydrazine and hydrides of Periodic Table Group IA, IIA, IIIA metals,

and wherein said phosphorus containing adjuvant is of the general formula L'_3P wherein each L' is the same or a different hydrocarbyl or hydrocarbyloxy radical selected from aryl or aryloxy radicals having 6 to 12 carbon atoms; alkaryl, aralkyl, alkaryloxy, or aralkoxy radicals having 7 to 12 carbon atoms; or alkyl or alkoxy radicals having 1 to 12 carbon atoms.

16. A process in accordance with claim 1 wherein said olefin has from 2 to 20 carbon atoms and is represented by the formula



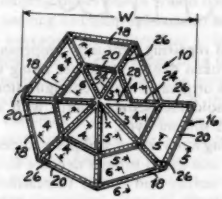
wherein each R_1, R_2, R_3 and R_4 represents a hydrogen alkyl, alkenyl, cycloalkyl or cycloalkenyl radical.

4,195,043

RANDOMLY DUMPABLE SELF ORIENTING SPIRAL PACKING ELEMENTS

Earl H. Foote, Atwater; Frank D. Moore, Tallmadge, and Ralph F. Strigle, Jr., Akron, all of Ohio, assignors to Norton Company, Worcester, Mass.

Filed Jan. 17, 1979, Ser. No. 4,076
Int. Cl.² B01F 3/04
U.S. Cl. 261—94 **10 Claims**



1. A randomly dumpable self orienting spiral packing element comprising:

a spiral wall member of predetermined wall thickness and axial height extending more than one spaced convolution around an axis and axially between opposite sides of the packing element and having

an inner convolution spaced from the axis; and

at least a part of at least one other outer convolution extending and spaced from the inner convolution;

a plurality of angularly spaced radial ribs of which at least one differs in radial length and radial wall portions thereof extending axially between the opposite sides and radially between the axis and adjoining wall portions of the spiral wall member; and

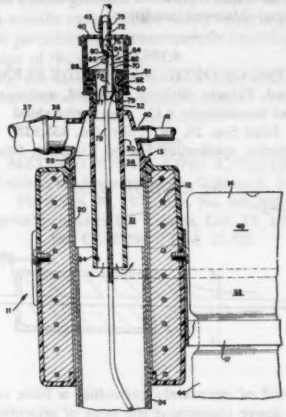
a plurality of open end cells of which at least one differs in size and volume extending axially between the opposite sides, angularly spaced radial wall portions of the ribs and adjoining wall portions of the spiral member; and a maximum transverse dimension between diametrically opposite wall portions of the packing element measured along an opposite side thereof greater than its axial length between the opposite sides.

4,195,044

HUMIDIFIER-NEBULIZER

Kenneth G. Miller, Elk Grove Village, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Continuation-in-part of Ser. No. 826,119, Aug. 19, 1977, Pat. No. 4,110,419, which is a continuation of Ser. No. 569,490, Apr. 18, 1975, abandoned. This application Jan. 24, 1978, Ser. No. 872,026
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.² A61M 15/00
U.S. Cl. 261—142 **12 Claims**



1. Cartridge type humidifying and nebulizing apparatus for humidifying a breathable gas such as oxygen-supplemented air or the like to be inhaled by a patient undergoing inhalation therapy, said apparatus comprising in combination:

(a) cartridge module means embodying a tubular cartridge main body portion with an inner peripheral wall;

(b) said cartridge module means also including an upper end portion with cap means unitarily attached to said main body portion and a lower end portion unitarily attached to said main body;

(c) liquid holding means in association with said lower end portion of said cartridge means for helping retain humidifying liquid in association therewith during operative use of said apparatus;

(d) said cartridge module means further comprising liquid absorption means including an open center generally tubular liquid-absorption column member with an inner peripheral face constituting an evaporating surface for humidifying liquid disposed generally contiguously within and coextensive with a substantial part of said cartridge main body and lower end portion thereof, said absorption column having a lower end portion adapted to be wetted directly by humidifying liquid when in said liquid holding means, and to convey by absorption liquid upwardly adjacent said evaporating surface;

(e) said upper-end-portion-mounted cap means of said humidifier cartridge module means of paragraph (b) providing a generally closed air space above the humidifying liquid level of said liquid holding means of paragraph (c);

(f) said cap means unitarily including a gas inlet feed pipe for directing gas to be humidified into said cartridge main body, at a point above said liquid level, for humidification within said closed air space;

(g) said gas inlet feed pipe having a venturi insert means including an elongated body with longitudinally disposed upper and lower stem portions that are axially offset and constituting gas and liquid inlet passages respectively, said passages terminating inwardly in transversely adjacent

orifices constituting part of the nebulizing means whereby a flow of pressurized gas out of the gas passage orifice past the orifice of said liquid passage creates a suction in the latter adapted to draw liquid therethrough from said liquid in said lower end portion to be aspiratively carried by said gas flow through said gas inlet feed pipe;

(h) said cartridge module means further including a separate projecting humidified-gas-outlet delivery pipe disposed a substantial distance above said liquid level and in direct fluid communication with said closed air space, said delivery pipe adapted to be connected with an output delivery tube leading to said patient, whereby said gas in said module and delivery tube is maintained in a substantially fully vapor-saturated condition.

4,195,045

COUPLING OF OPTIC-WAVEGUIDE ELEMENTS

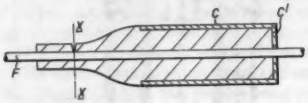
John F. Mead, Princes Risboro, England, assignor to Plessy Handel und Investments A.G., Zug, Switzerland

Filed Sep. 23, 1977, Ser. No. 835,918

Claims priority, application United Kingdom, Sep. 25, 1976, 39905/76

Int. Cl.[2] **B29D** *11/00*

U.S. Cl. 264—1 **1 Claim**



1. A method of accurately providing a fibre end with a surrounding sleeve comprising the steps of providing a precision made cylindrical sleeve, providing a sleeve of resiliently stretchable elastomer material, said elastomer sleeve having, when unstretched, an inside diameter substantially smaller than the outside diameter of the precision made cylindrical sleeve, is placed with an end part of its length over the open end part of the cylindrical precision sleeve, and the latter is closed at its other end by a plug or end wall having a co-axial bore closely fitting the fibre, in which the fibre is threaded through the thus assembled sleeves and the bores of the end walls thereof with the free end of said fibre projecting through the bore in the plug or end wall closing the elastomer sleeve, in which resin material is injected to fill the cavity formed jointly by the interior of the precision cylinder sleeve and the elastomer sleeve, in which before the resin material has set a knife edge member is introduced in a plane substantially normal to the axis of the fibre to cuttingly penetrate through the elastomer sleeve and the resin material, in which when the resin material has set the knife edge member is removed leaving a cleavage formed in the body of the resin material, in which subsequently the elastomer sleever is removed and in which the part of the resin material body which projects from the open end of the precision sleeve is, together with the fibre enclosed therein, snapped at the cleavage.

4,195,046

METHOD FOR MOLDING AIR HOLES INTO A TOOTH POSITIONING AND RETAINING APPLIANCE

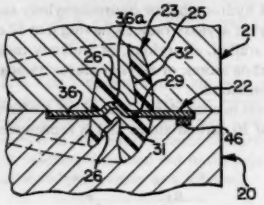
Peter C. Kesling, Green Acres, La Porte, Ind. 46320

Filed May 4, 1978, Ser. No. 902,874

Int. Cl.[2] **A61C** *13/00*; **B29C** *5/00*; **B29H** *3/00*

U.S. Cl. 264—16 **6 Claims**

1. A method for making a tooth positioning and retaining appliance with air holes, said appliance having an arch-shaped body of resilient material with upper and lower archways arranged in ideal arch relationship to receive upper and lower arches of a person, and air holes between the archways and the labial and lingual sides of the body, said method comprising the steps of setting up a mold having upper and lower mold members with models of the upper and lower dental arches to form the archways and an intermediate mold member, supporting air hole forming means by said intermediate mold member to extend at an acute angle to an occlusal plane of at least one of



said models, closing the mold, filling the mold with curable molding material, curing the material, opening the mold, removing the molded appliance with the air hole forming means, and removing the air hole forming means from the appliance to define the air holes.

4,195,047

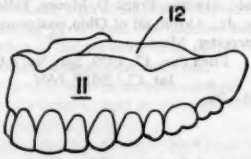
METHOD FOR REPAIRING BROKEN DENTURE

Herman R. Drennan, 32888 Palomares Rd., Castro Valley, Calif. 94546, and Norman A. Hana, 5520 Longview Dr., Paradise, Calif. 95969

Division of Ser. No. 731,282, Oct. 12, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,293

Int. Cl.[2] **A61C** *13/04*; **B29C** *5/00*; **B29D** *9/00*

U.S. Cl. 264—17 **2 Claims**



1. A method of repairing dentures comprising the steps of:

(1) gluing a broken denture together along its break to restore it to its original integral configuration;

(2) mixing a moldable, settable putty with a catalyst, said putty being a silicone type,

(3) gently forcing a portion of said putty under pressure onto a surface of said glued broken denture so it conforms to and extends across said break, thereafter allowing said putty to set-up,

(4) removing said broken denture from the resulting impression in said putty,

(5) separating said denture along said break and removing denture material on either side thereof;

(6) replacing said denture in the impression in said putty; and

(7) subsequently adding settable plastic material to the area of said break to bond pieces of said denture together as a unitary, serviceable denture.

2. A method of relining denture which contain a wash material on the roof pallate surface comprising the steps of:

(1) mixing a moldable settable putty with a catalyst, said putty being a silicone type;

(2) gently forcing a portion of said putty under pressure onto the surface of the wash material disposed on a denture with teeth in a sufficient amount to cover it with at least a layer of $\frac{1}{4}$ of an inch, and allowing said putty to set-up thereafter;

(3) placing said putty and denture in a dowelled two-part jig and setting the teeth of the denture and said putty with plaster-like material respectively in opposite parts of said jig and allowing said plaster-like material to harden,

(4) subsequently separating said jig,

(5) removing said wash material from the surface of said denture and

(6) reassembling said jig with a settable liquid plastic material between said denture and said putty in sufficient amount to fill the cavity left by removal of said wash material and allowing said plastic material to set-up and bond to said denture thereby effecting a reline thereof.

4,195,048

COMPENSATION FOR DIFFERING HEIGHTS OF DIFFERENT MOLDS CLAMPED BETWEEN THE MOLD-CLAMPING PLATES OF AN INJECTION-MOLDING MACHINE

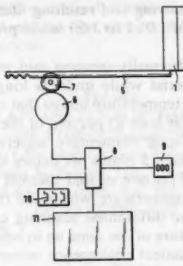
Dieter Jung, Freiamt-O, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,138

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740830

Int. Cl.[2] B29C *3/06*; B29F *1/14*

U.S. Cl. 264—40.1 **2 Claims**



1. A method of controlling the operation of an injection-molding machine, the injection-molding machine comprising a pair of mold-clamping plates one of which is stationary and the other shiftable serving to clamp split molds between them and control means operative for controlling at least one machine operation in dependence upon the height of the mold clamped between the mold-clamping plates, the method comprising: generating a position signal indicative of the position of the shiftable mold-clamping plate using an absolute-coded angular position indicator coupled to the shiftable mold-clamping plate, applying the position signal to one input of a subtractor and displaying the position signal using a display means connected to receive the output signal of the subtractor, the displayed position signal being zero when the mold-clamping plates are pressed together into contact with each other with no mold clamped between them, inserting a split mold between the mold-clamping plates and clamping the mold closed whereby the mold-clamping plates are spaced from each other and the displayed position signal is non-zero, and applying to the subtracting input of the subtractor a signal causing the displayed position signal to become zero using a decades switch arrangement connected to said subtracting input by setting the decades switch arrangement to a value corresponding to said non-zero position signal, and applying the output signal of the subtractor to the control means.

4,195,049

METHOD OF INCREASING THE STRENGTH OF A BETA SILICON CARBIDE ARTICLE

Jack E. Noakes, Plymouth, and Leslie L. Terner, West Bloomfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 13, 1978, Ser. No. 924,122

Int. Cl.[2] C04B *35/56*

U.S. Cl. 264—63 **2 Claims**

1. A method of making a beta silicon carbide article which comprises:

forming a moldable mixture consisting of (a) beta silicon carbide particles, (b) from at least about 1/16% by weight to no more than ¼% by weight of the total weight of the moldable mixture of niobium carbide particles, and (c) a binder material for supporting the beta silicon carbide particles and niobium carbide particles for molding operation, said binder being one which upon pyrolization forms a volatile phase and a non-volatile carbon phase;

molding said moldable mixture into a mold to form an article having the shape of the mold;

pyrolizing said article formed in the shape of the mold so that said binder gives off its volatile phase thereby to form its non-volatile carbon phase which binds said beta silicon carbide particles and niobium carbide particles together in the shape of the article;

silicidizing the article to transform the carbon remaining from said binder to beta silicon carbide.

4,195,050

METHOD FOR MAKING A FILTER

Peter A. Walther, am Neuschacht 44, Grünbach, Austria (2733)

Filed Sep. 29, 1978, Ser. No. 946,946

Claims priority, application Austria, Oct. 17, 1977, 7402/77

Int. Cl.[2] B29C *17/08, 25/00*

U.S. Cl. 264—137 **6 Claims**

1. A process for making a filter comprising placing in a hollow tubular envelope a plurality of small filter tubes closed at both of their ends, immersing the envelope together with the small filter tubes into a hardenable substance to a depth such that the said substance bonds one of the ends only of each of the small tubes and at the same time forms a bottom member on the envelope so as to close the gaps between the individual small tubes as well as the gaps between the envelope and the small tubes, and removing an amount of the layer of the hardenable substance together with the end of the small tubes, said immersing being to a depth of 30 mm into latex and such that the individual small filter tubes are wetted by the latex and the gaps between the small filter tubes are sealed, whereafter the surplus latex mass is allowed to drain, applying epoxy resin to said latex on said tubes then cutting the resin and latex layers and the ends of the small tubes from the envelope so that the ends of the small tubes embedded in latex or resin are opened, said epoxy, thereby forming a tube-sheet for said tubes and sheet for said tubes and said envelope.

4,195,051

PROCESS FOR PREPARING NEW POLYESTER FILAMENTS

Hans R. E. Frankfort, and Benjamin H. Knox, both of Kinston, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

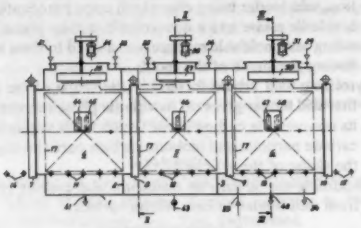
Division of Ser. No. 802,977, Jun. 2, 1977, Pat. No. 4,134,882, which is a continuation-in-part of Ser. No. 694,919, Jun. 11, 1976, abandoned. This application Oct. 5, 1978, Ser. No. 948,802

Int. Cl.[2] B28B *3/20*; D01D *5/12*; D01F *11/00*

U.S. Cl. 264—176 F **26 Claims**

1. In a process for melt-spinning ethylene terephthalate polyester and cooling in the atmosphere to solidify as filaments

with a low differential birefringence between the surface and the core of such filaments, the improvement, when withdrawing the filaments at a speed (V in yards/minute) of at least about 5500 yards/minute, wherein the polymer temperature (T_p), measured (in °C.) in the filter pack at a point 50–100 mils



above the center of the spinneret plate, is maintained above a minimum value depending on an exponential of the speed V and a function of the length (L) and diameter (D) (in mils) of the spinneret capillary and the throughput (w) (in pounds per hour) per capillary according to the relationship:

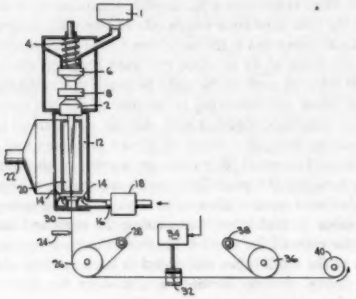
$$T_p \geq 284.5\left[\exp\left(\frac{V}{85{,}000}\right)\right] - 660\left(\frac{Lw}{D^4}\right)^{0.685}$$

4,195,052

PRODUCTION OF IMPROVED POLYESTER FILAMENTS OF HIGH STRENGTH POSSESSING AN UNUSUALLY STABLE INTERNAL STRUCTURE

Herbert L. Davis, Convent Station; Michael L. Jaffe, Summit, both of N.J.; Herman L. LaNieve, III, and Edward J. Powers, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 26, 1976, Ser. No. 735,849
Int. Cl.² D01D 5/12
U.S. Cl. 264—210.5 **29 Claims**



1. A process for the production of improved polyester filaments of high strength having an unusually stable internal structure which particularly are suited for use at elevated temperatures and exhibit a work loss of 0.004 to 0.02 inch-pounds when cycled between a stress of 0.6 gram per denier and 0.05 gram per denier at 150° C. measured at a constant strain rate of 0.5 inch per minute on a 10 inch length of yarn of said filaments normalized to that of a multifilament yarn of 1000 total denier consisting essentially of:

(a) extruding a molten melt-spinnable polyester which contains 85 to 100 mol percent polyethylene terephthalate and 0 to 15 mol percent of copolymerized ester units other than polyethylene terephthalate having an intrinsic viscosity of 0.5 to 2.0 deciliters per gram through a shaped extrusion orifice having a plurality of openings to form a molten filamentary material,

(b) passing the resulting molten filamentary material in the direction of its length through a solidification zone having an entrance end and an exit end wherein said molten filamentary material is uniformly quenched and transformed into a solid filamentary material,

(c) withdrawing said solid filamentary material from said solidification zone while under a substantial stress of 0.015 to 0.150 gram per denier measured immediately below the exit end of said solidification zone,

(d) continuously conveying said resulting as-spun filamentary material from the exit end of said solidification zone to a first stress isolation device at a rate of 500 to 3000 meters per minute with said filamentary material as it enters said first stress isolation device exhibiting a relatively high birefringence of $+9\times10^{-3}$ to $+70\times10^{-3}$,

(e) continuously conveying said resulting filamentary material from said first stress isolation device to a first draw zone,

(f) continuously drawing said resulting filamentary material at a draw ratio of 1.01:1 to 3.0:1 while present in said first draw zone, and

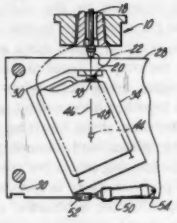
(g) subsequently thermally treating said previously drawn filamentary material while under a longitudinal tension and present at a temperature above that of said first draw zone to achieve at least 85 percent of the maximum draw ratio of said as-spun filamentary material and impart a tenacity of at least 7.5 grams per denier to the same, with at least the final portion of said thermal treatment being conducted at a temperature within the range from about 90° C. below the differential scanning calorimeter peak melting temperature of the same up to below the temperature at which filament coalescence occurs.

4,195,053

METHOD AND APPARATUS FOR BLOW MOLDING CONTAINERS

Edwin H. Lambarth, Manchester, Mich., assignor to Hoover Universal, Inc., Saline, Mich.

Filed Oct. 26, 1978, Ser. No. 955,129
Int. Cl.² B29C 17/07
U.S. Cl. 264—533 **12 Claims**



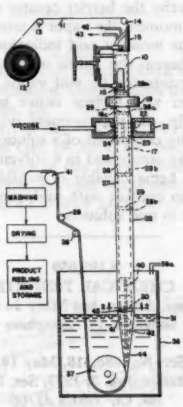
1. A method of blow molding a container with an angular neck having an upper opening from a parison of thermoplastic material that is positioned between open mold sections and about a blow pin having a vertical axis, said mold sections when closed and in their upright positions defining a cavity of the shape of said container with the axis of the angular neck being angularly disposed to said vertical axis, and said parison being sufficiently wide so that it encompasses the neck opening in the mold cavity when the mold sections are closed onto the parison, characterized by closing the mold sections onto said parison, moving the closed mold sections relative to said vertical axis until said neck axis coincides with the axis of said blow pin, advancing said blow pin axially into the angular neck of said cavity and blowing the parison to the shape of the cavity, and thereafter opening said mold sections and removing the blown container.

10. Apparatus for blow molding a container with an angular neck having a upper opening from a parison of thermoplastic material, comprising an extrusion head having an extrusion orifice with a vertical axis and an axially moveable blow pin coaxially extending through said orifice, means for advancing and retracting the blow pin, means for introducing blowing fluid to the blow pin, a pair of mold sections mounted on platens below said orifice and moveable between an open position for receiving said parison therebetween and a closed position to pinch the parison therebetween, said mold sections defining when closed a cavity of the shape of said container with the axis of the angular neck being angularly disposed with respect to and intersecting said vertical axis, and said extrusion orifice having a shape and dimension so that the parison extruded therefrom is sufficiently wide so that it encompasses the neck opening in the mold cavity when the mold sections are closed onto the parison, characterized in that said mold sections are mounted on said platens for relative movement between first positions wherein said neck axis is angularly disposed relative to said vertical axis and second positions wherein said neck axis coincides with the axis of said blow pin, and actuating means operatively connected between said mold sections and said platens for moving said mold sections to either of said positions.

4,195,054
METHOD AND APPARATUS FOR THE MANUFACTURE OF FIBROUS CASING

Michael Verellen, Lille, and Ghislain Thaens, Lommel, both of Belgium, assignors to Teepak, Inc., Chicago, Ill.

Filed Apr. 21, 1978, Ser. No. 898,750
Int. Cl.[2] B29D 7/22
U.S. Cl. 264—558 **8 Claims**



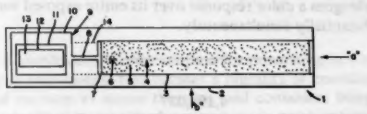
1. An apparatus for the manufacture of fibrous sausage casing from a fibrous tube having interstices which can be filled with viscose which comprises in combination, means for advancing the tube, a mandrel having a top end and a bottom end over which the tube is axially advanced, means for impregnating the interstices of the tube with viscose while the tube is being advanced over the mandrel, means for coagulating the viscose impregnated in the tube with a coagulation agent, means for evacuating spent coagulating agent from the interior of the tube, gas applying means for directing a gas at a low positive pressure to flow between the tube and the mandrel, the gas flow being at a rate commensurate with the evacuation of the spent agent sufficient to support and maintain the tube in radially spaced relation to the mandrel but insufficient to cause a measurable change in the initial dimensions of the tube during the passage of the tube over the mandrel.

6. In the method for manufacturing fiber-reinforced cellulose sausage casing wherein a paper tube is passed downwardly over a mandrel, impregnated with viscose, subjected to the action of a coagulating liquid to regenerate cellulose and spent coagulating liquid is removed from the interior of the tube, the improvement comprising causing a gas stream to be flowed within the tube as the tube is passed over the mandrel to maintain the tube in radially spaced relation to the mandrel as it is passed thereover, the gas stream being flowed at a pressure commensurate with the evacuation of the spent liquid sufficient to maintain the cylindrical dimensions of the tube but insufficient to cause a measurable change in the dimensions of the tube, whereby contact of the tube with the mandrel is substantially avoided.

4,195,055
VAPOR-PHASE MOVING-BOUNDARY INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morristown, N.J.

Filed Jun. 1, 1978, Ser. No. 911,565
Int. Cl.[2] G01N 21/06
U.S. Cl. 422—56 **13 Claims**



1. In a device for monitoring the time-temperature history of an article comprising

(a) a closed vapor-impermeable container;

(b) a chamber forming one portion of said container;

(c) an indicator, comprised of an adsorptive substrate, through which vapor can permeate at measurable rate, having a solid deposited on at least the outer surface thereof, said solid capable of undergoing a color response upon contact with vapor specified below, and said indicator positioned inside said container such that the outer surface of said indicator, containing said solid, is in sealing contact with a portion of the inner surface of the container;

(d) a source of vapor within said chamber, said vapor being capable of traveling through the substrate by permeation thereof, and being constrained by said sealing contact to travel through said substrate in order to contact said solid; and

(e) means for providing said vapor at a given moment to the chamber; whereby a moving colored boundary is produced during travel of the adsorbed vapor throughout the indicator; the improvement which comprises a diacetylene compound, or mixture thereof, containing at least one —C≡C—C≡C— group per molecule, as said solid.

4,195,056
VAPOR PERMEATION TIME-TEMPERATURE INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 1, 1978, Ser. No. 911,629
Int. Cl.[2] G01N 21/06
U.S. Cl. 422—56 **20 Claims**

1. A device for monitoring the time-temperature history of an article comprising:

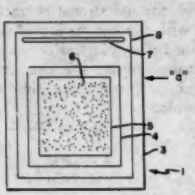
(a) a closed vapor-impermeable container;

(b) at least one vapor-permeable barrier within said container;

(c) vapor capable of permeating through the permeable barrier;

(d) means for providing vapor at a given moment to said container, said means positioned on one side of the barrier; and

(e) at least one indicator, comprised of a solid deposited on a substrate, capable of exhibiting a visual color response upon contact with said vapor, said indicator positioned on the other side of the barrier, whereby the barrier creates



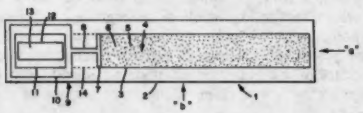
an induction period between the moment the vapor is introduced to said container and the moment said indicator exhibits the color response and wherein said indicator undergoes a color response over its entire exposed surface substantially simultaneously.

4,195,057

VAPOR-PHASE MOVING-BOUNDARY INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1978, Ser. No. 938,173
Int. Cl.[2] G01N *21/06*
U.S. Cl. 422—56 **9 Claims**



1. In a device for monitoring the time-temperature history of an article including

(a) a closed vapor-impermeable container;

(b) a chamber forming one portion inside of said container;

(c) an adsorptive substrate, through which vapor can permeate at measurable rate, having an indicating compound deposited on at least the outer surface thereof, said compound capable of undergoing a color response upon contact with vapor or condensed vapor specified below, and said substrate positioned inside said chamber such that the outer surface of said substrate, containing said compound, is in sealing contact with a portion of the inner surface of said chamber;

(d) a source of vapor, reactive with said compound to produce a color response, within said chamber, said vapor being capable of traveling through the substrate by permeation thereof, and being constrained by said sealing contact to contact said substrate at only one portion of the observable surface of said substrate prior to traveling through said substrate in order to contact said compound on the surface of said substrate; and

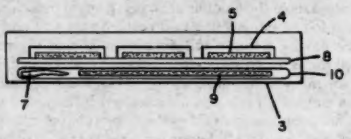
(e) means for providing said vapor at a given moment to the chamber; whereby a moving colored boundary is produced on the surface of the substrate during travel of the adsorbed vapor throughout the substrate, the improvement which comprises providing a polydiacetylene as said indicating compound in the form of a solution, in a solvent therefor, said solution being capable of exhibiting a visual color response upon contact with said vapor, and said vapor being soluble in said solution.

4,195,058

VAPOR PERMEATION TIME-TEMPERATURE INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1978, Ser. No. 938,175
Int. Cl.[2] G01N *21/06*
U.S. Cl. 422—56 **10 Claims**



1. In a device for monitoring the time-temperature history of an article including:

(a) a closed vapor-impermeable container;

(b) at least one vapor-permeable barrier within said container;

(c) vapor capable of permeating through the permeable barrier;

(d) means for providing vapor at a given moment to said container, said means positioned on one side of the barrier; and

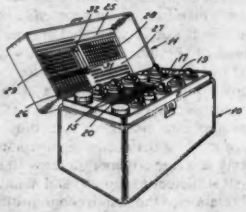
(e) at least one indicator, capable of exhibiting a visual color response upon contact with said vapor or condensed vapor, said indicator positioned on the other side of the barrier, whereby the barrier creates an induction period between the moment the vapor is introduced to said container and the moment said indicator exhibits the color response, wherein the entire observable surface of the indicator is contacted by said vapor, producing a color response over said surface entire surface substantially simultaneously, the improvement which comprises said indicator being comprised of a solution of a polydiacetylene indicating compound in a solvent therefor, wherein said solution being capable of exhibiting a visual color response upon contact with said vapor, and said vapor being soluble in said solution.

4,195,059

CHEMICAL TEST KIT

Kayleen S. Whitcher, Adrian, and Mary Jo Benner, Ann Arbor, both of Mich., assignors to Aquaphase Laboratories, Inc., Adrian, Mich.

Continuation of Ser. No. 686,318, May 14, 1976, abandoned. This application Jun. 3, 1977, Ser. No. 803,361
Int. Cl.[2] G01N *31/00*
U.S. Cl. 422—61 **8 Claims**



1. In a chemical test kit, the combination comprising

a housing,

means within said housing dividing said housing into a plurality of compartments,

each compartment having a row of container receiving portions,

and a container in each said container receiving portion of each said compartment,

means associated with each compartment having color indicia, the color indicia of said compartments differing from one another,

the containers in each compartment having color indicia corresponding to the color indicia of their compartment,

said containers in each compartment having consecutive written number or letter indicia thereon indicating the sequence in which they are to be used in a test,

a cover for said housing,

means for connecting said cover to said housing,

said cover having groups of written instructions thereon, the number of groups corresponding to the number of compartments, the written instructions for each group referring to the written indicia of that group,

the color indicia of each group of instructions being the same as the color indicia of the respective compartment,

said containers of each compartment, said compartments and said groups of instructions in said cover each being characterized by additional visual geometric indicia for each patterned relative to one another to be visually distinguishable by color blind persons and differing from one another and differing from said written and color indicia,

the additional indicia for color blind persons being the same for containers of each compartment, for the corresponding compartment and the group of instructions for that compartment, the additional indicia for color blind persons differing between compartments.

4,195,060

LIQUID REAGENT CARTRIDGE CUVETTE

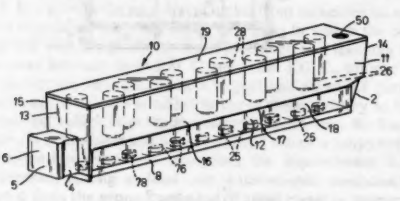
Harold S. Terk, Richardson, Tex., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 876,079, Feb. 8, 1978. This application Oct. 19, 1978, Ser. No. 953,055

The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.[2] **G01N** *33/16, 21/24*

U.S. Cl. 422—61 **5 Claims**



1. A substantially rigid cuvette cartridge adapted for use with chemical and microbiological analysis apparatus, said cartridge comprising the following elements:

a cartridge having a chamber with an opening for receiving fluid to be analyzed and a floor portion;

a plurality of cuvettes in fluid communication with said chamber and extending in a given direction from said floor portion and having baffle means to direct the introduction of a liquid reagent;

a first fluid passage means extending in a direction opposite said given direction;

a second fluid passage means extending in said given direction said first and second fluid passage means resulting in said fluid communication between said chamber and cuvettes.

4,195,061

STERILIZATION APPARATUS FOR INFUSION SOLUTIONS OR THE LIKE, FILLED IN CONTAINERS

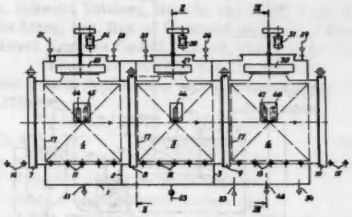
Karl Kalasek, Vienna III, Austria, assignor to Firma Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna I, Austria

Filed May 16, 1978, Ser. No. 906,579

Claims priority, application Austria, May 17, 1977, 3532/77

Int. Cl.[2] **A61L** *1/00, 3/00*

U.S. Cl. 422—109 **13 Claims**



1. A sterilization device adopted for processing in a substantially contamination-free manner a plurality of containers disposed on support means therefor, said containers being filled with goods to be sterilized, comprising in combination:

a housing provided with a passage for receiving and discharging said support means,

preheating means for preheating said containers to a predetermined temperature within said housing, and including first supply means adapted to supply a heated fluid to said preheating means,

heating means for at least maintaining said containers at said predetermined temperature within said housing, including second supply means adapted to supply said heated fluid to said heating means, so that said containers and the goods therein become sterilized,

cooling means disposed in said housing and adapted to use a cooled and circulating fluid for cooling said containers to a second predetermined temperature following sterilization of said containers by said heating means,

a plurality of openable and closeable doors arranged in said passage to define first, second and third chambers encompassing said preheating means, said heating means, and said cooling means, respectively, including means for separately controlling each of said chambers with respect to temperature and pressure prevailing therein, and means for passing said containers sequentially through said chambers, corresponding of said chambers substantially remaining intermittently closed, when said containers are being processed therein, and

agitating means provided in each of said chambers for circulating the fluid contained in the respective chamber therethrough.

4,195,062

FLUE GAS SCRUBBING

James R. Martin, West Simsbury, and Khaldoun W. Malki, Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

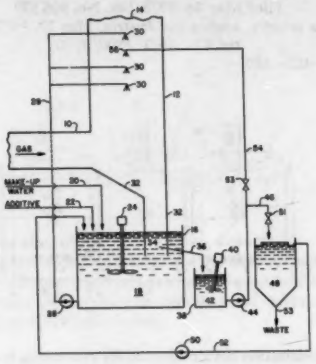
Filed Mar. 21, 1978, Ser. No. 888,819

Int. Cl.[2] **C01B** *17/82*

U.S. Cl. 422—168 **1 Claim**

1. A limestone additive flue gas scrubbing system for SO_2 removal comprising: a main reaction tank containing slurry; means for adding make-up water to said main reaction tank; means for adding limestone to said main reaction tank; duct means for confining the flue gas stream; means for pumping the slurry to an upper elevation and passing the slurry through the flue gas in direct contact therewith; confining means at a lower elevation for collecting the returning slurry and guiding the slurry back to said main reaction tank; a secondary reaction

tank; means for conveying a portion of the returning slurry directly from said confining means to said secondary reaction tank as the only supply thereto; a thickener; means for conveying a first portion of the slurry from said secondary reaction



tank to said thickener; means for returning the liquid portion of said slurry from said thickener to said main reaction tank; means for conveying the remaining portion of the slurry from said second tank to an upper elevation and passing the slurry through the flue gas in direct contact therewith.

4,195,063

CATALYST ELEMENT FOR CLEANING EXHAUST GASES

Kazuo Iwaoka; Tagao Toh, both of Toyonaka, and Minoru Fukada, Kodoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

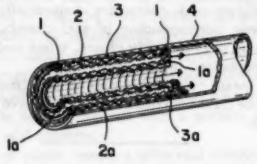
Continuation of Ser. No. 814,974, Jul. 12, 1977, which is a continuation-in-part of Ser. No. 794,115, May 5, 1977, which is a continuation of Ser. No. 605,395, Aug. 18, 1975, abandoned.

This application Dec. 11, 1978, Ser. No. 968,405

Claims priority, application Japan, Sep. 3, 1974, 49-101516; Sep. 3, 1974, 49-106251; Dec. 20, 1974, 49-147488; Jun. 2, 1975, 50-74986

Int. Cl.[2] F01N *3/15*; B01J *8/02, 35/04*

U.S. Cl. 422—180 **3 Claims**



1. In combination with a main exhaust gas catalytic element cleaning device, an auxiliary catalytic element cleaning device situated upstream of said main device, said auxiliary device comprising:

a generally cylindrical elongated exhaust pipe section;

a first inner generally cylindrical heat resistant metal mesh support;

a first outer generally cylindrical heat resistant metal mesh support coaxial with and spaced apart from said inner support;

said supports having shapes conforming to the interior surface of said exhaust pipe section, so that the external surface of said outer support is disposed in juxtaposition with said interior exhaust pipe surface;

a first web comprising a layer of heat resistant catalytic material disposed between and retained in position by said inner and outer supports;

a second inner generally cylindrical heat resistant metal mesh support;

a second outer generally cylindrical heat resistant metal mesh support coaxial with and spaced apart from said inner support;

said second supports being disposed within and coaxially spaced from said first supports,

a second web comprising a layer of heat resistant catalytic material disposed between and retained in position by said second inner and outer supports;

a pair of end members secured to respective ends of said supports and to the interior surface of said exhaust pipe section, for maintaining said supports in alignment so that exhaust gases flow through said section in the longitudinal direction thereof in a path substantially confined to the internal surfaces of said first inner support, parallel to and in surface contact with interior surface portions of said first catalytic web and with both exposed surfaces of said second catalytic web, and

means for connecting and communicating said auxiliary catalytic device with said main catalytic device.

4,195,064

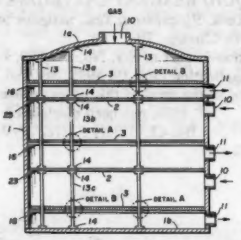
UNITIZED CATALYTIC REACTOR CONSTRUCTION

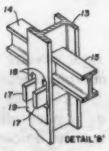
Joseph C. Betteken, St. Louis, and Jerome D. McDaniel, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 15, 1978, Ser. No. 933,700

Int. Cl.[2] C01B *17/80*; B01J *8/04*

U.S. Cl. 422—191 **7 Claims**





1. In a vertical multistage catalytic reactor of the type comprising a large diameter cylindrical vessel divided into a plurality of superimposed serially disposed catalytic stages by a plurality of circular division plates supported on a plurality of vertical columns, and within each such stage an open grid support for a bed of catalyst, with fluid inlet and outlet means to each such stage disposed such that when in operation the

fluid entering each such stage is caused to flow through the bed of catalyst contained therein before existing such stage, the improvement which comprises providing as unitized support for said catalyst support grids within each such stage:

(a) a plurality of horizontally disposed beams for support of said catalyst support grids, said beams in turn being supported by said vertical columns as set forth in (d) through (g) below,

(b) at least a major portion of said vertical columns comprising a unitized structure from the top to the bottom of said vessel and being fixedly attached at the respective ends thereof to said top and bottom of said vessel,

(c) at least a portion of said vertical columns being windowed along their length with at least some of said beams being mounted for movement relative to said vertical columns through said windows,

(d) each such beam being of such length that either (i) said beam spans as a chord from one point on the inner circumference of said vessel to another point on said circumference and is movably supported by conventional means at both ends or (ii) at least one end of said beam abuts one of the remaining vertical columns with sufficient clearance therefrom to allow for thermal expansion without exertion of substantial force thereon,

(e) in combination with each junction between a beam and a window in a support column, a rocker means affixed to the support column and upon which the beam is supported,

(f) in combination with each junction between an end of a length of beam and a support column, a rocker means affixed to the support column and upon which the end of the beam is supported, and

(g) wherein each rocker means is affixed to the support column such that the surface of the rocker means in contact with the beam associated therewith is free to move as the beam thermally expands or contracts along its longitudinal axis.

4,195,065

LEACHING NICKELIFEROUS OXIDE ORES

Willem P. C. Duyvesteyn, Arvada, Colo., assignor to Amax Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 820,624, Aug. 1, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 958,287

Int. Cl.[2] C01G *53/10*

U.S. Cl. 423—150 **13 Claims**

1. In a process for recovering nickel from nickeliferous oxide ores containing less than about 35% iron in which the ore is slurried with water, the slurry is preheated to a leaching temperature between about 230° C. and about 300° C., sulfuric acid in an amount between about 0.15 part and about 0.8 part for each part of dry ore is added to the preheated slurry to leach the nickel values from the nickeliferous oxide ores, the leached slurry is neutralized and the neutralized slurry is subjected to a liquids-solids separation operation, the improvement which comprises: adding at least one water-soluble compound selected from the group consisting of alkali metal or ammonium compounds to the slurry when the leaching reactions are more than half complete in small but effective amounts to minimize dissolution of silica, whereby the settling rate of the neutralized slurry is improved.

9. In a process for recovering nickel from nickeliferous oxide ores containing about 37.1% iron in which the ore is slurried with water, the slurry is preheated to leaching temperature between about 230° C. and about 300° C., sulfuric acid in an amount between about 0.15 part and about 0.8 part for each part of dry ore is incrementally added to the preheated slurry to maintain the aluminum content of the slurry at a value of less than about 3 grams per liter to leach the nickel values from the nickeliferous oxide ores, the leached slurry is neutralized and the neutralized slurry is subjected to liquid-solids separation, the improvement which comprises: adding at least one water-soluble compound selected from the group consisting of alkali metal or ammonium compounds to the slurry when the leaching reactions are more than 50% complete in small but effective amounts to minimize dissolution of silica whereby the settling rates of the neutralized slurry is improved.

4,195,066

PROCESS FOR THE PRODUCTION OF DENSE SINTERED SHAPED ARTICLES OF POLYCRYSTALLINE BORON CARBIDE BY PRESSURELESS SINTERING

Karl A. Schwetz, Sulzberg, Austria, and Georg Vogt, Kempten-Sankt Mang, Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,778

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2751998

Int. Cl.[2] C04B *35/52*; C01D *31/36*

U.S. Cl. 423—291 **31 Claims**

1. A process for the manufacture of a dense sintered shaped article of boron carbide, which comprises

(i) forming a homogeneous mixture of

(a) boron carbide having a B:C atomic ratio within the range of from 4.5:1 to 3.5:1 and a particle size not exceeding 1 μm, and

(b) a carbon-containing component consisting of amorphous carbon or of an organic material that can be coked to form amorphous carbon at a temperature not exceeding 1000° C., in an amount corresponding to from 0.5 to 10% free carbon, based on the total weight of the boron carbide,

(ii) molding and shaping the mixture into a green body having a density of at least 50% of the theoretical density of boron carbide, and

(iii) sintering the green body in an atmosphere inert to boron carbide or in vacuo, at a temperature within the range of from 2100° C. to 2200° C., to form an article having a density of at least 90% of the theoretical density of boron carbide.

4,195,067

PROCESS FOR THE PRODUCTION OF REFINED METALLURGICAL SILICON

Peshotan S. Kotval, Hartsdale, and Harold B. Strock, North Tarrytown, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,758

Int. Cl.[2] C01B *33/02*

U.S. Cl. 423—348 **40 Claims**

1. A process for the production of lowcoat refined metallurgical silicon from metallurgical grade silicon comprising:

a. dissolving metallurgical grade silicon in a liquid metal solvent to form a liquid metal solvent-silicon solution;

b. cooling said solution to a temperature at which silicon platelets form;

c. removing silicon platelets from said solution of metallurgical grade silicon in a liquid metal solvent, thereby recovering partially purified, essentially ironfree silicon platelets with adherent impurities derived from said metal solvent;

d. melting said partially purified silicon platelets in contact with acid silica slag in a melting zone, the resulting slag oxidation removing residual and adherent impurities from the silicon platelets; and

e. removing the silicon-slag melt from the melting zone in an unidirectional manner so as to directionally solidify said silicon, said directional solidification resulting in the obtaining of solidified refined metallurgical silicon and a region of solidified melt having a high concentration of impurities rejected by the refined metallurgical silicon as it solidifies, said directionally solidified refined metallurgical silicon comprising a multigrained silicon having a resistivity of from about 0.04 to about 0.2 ohm-cm, said silicon having impurity concentrations of up to, but not exceed-

ing, about 1 ppm of aluminum, about 1 ppm of iron, about 2 ppm of titanium, about 2 ppm of boron, about 2 ppm of phosphorus, about 1 ppm of chromium, about 1 ppm of calcium and about 1 ppm of magnesium,

whereby said multigrained refined metallurgical silicon is produced at a substantially higher impurity content level than in a conventional high purity semiconductor grade silicon and has suitable properties for solar cell applications.

4,195,068

PROCESS FOR THE PRODUCTION OF FURNACE BLACK

Lothar Rothbühr, Hermülheim; Gehard Kühner, and Gunther Dittrich, both of Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 555,084, Mar. 4, 1975, abandoned. This application Dec. 27, 1978, Ser. No. 973,716

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1974, 2410565

Int. Cl.[2] C09C *1/48, 1/50*

U.S. Cl. 423—455 **13 Claims**

1. In a process for the production of carbon black low in coke and grit at a high hourly rate and high yield per unit of liquid feedstock employed to form the carbon black in a furnace black reactor including a burner-injector combination for the production of heat energy and for the injection of very fine drops of carbon black forming liquid, the improvement comprising employing as said reactor one having restriction therein, said burner-injector comprising an inner tube as said injector and a first jacket tube surrounding said inner tube, an exit nozzle, said jacket tube being constricted prior to said exit nozzle, said restriction being such that the cross-sectional area of the reactor passage is narrowed to no more than one-third the cross-sectional area before the restriction, and an outer tube surrounding said first jacket tube, said outer jacket tube being provided with 4 to 12 gas outlets distributed over 360°, the free diameter of the inner tube exist being between 40 and 75% of the free diameter of the first jacket tube, supplying liquid carbon black forming material through said inner tube, supplying a gaseous atomizing medium through said first jacket tube, mixing said liquid carbon black forming material with said gaseous atomizing medium immediately prior to said exit nozzle and in the area of restriction and supplying fuel gas through said gas outlet openings at an exit pressure of over 1.5 atmospheres absolute and a fuel gas exit speed of over 320 meters/sec.

4,195,069

PREPARATION OF VIOLET $TiCl_3$

Andras G. Th. G. Kortbeek; Adrianus A. van der Nat; Wilhelmina J. M. van der Linden Lemmers, and Willem Sjardijn, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 17, 1977, Ser. No. 807,696

Claims priority, application United Kingdom, Jul. 12, 1976, 28897/76

Int. Cl.[2] C01G *23/02*

U.S. Cl. 423—492 **9 Claims**

1. A process for the preparation of violet $TiCl_3$ by reducing $TiCl_4$ with an organoaluminum compound which comprises:

(a) premixing the $TiCl_4$ with a complexing agent in an inert organic solvent, the molar ratio complexing agent:$TiCl_4$ being within the range from 0.5:1 to 1.5:1;

(b) premixing the organoaluminum compound with a complexing agent in an inert organic solvent, the molar ratio complexing agent: organoaluminum compound being within the range from 0.5:1 to 1.5:1;

(c) carrying out the reduction to $TiCl_3$ and precipitation of $TiCl_3$ in a single step by combining at least one stoichiometric equivalent of $TiCl_4$ in the premixed composition of step (a) with one stoichiometric equivalent of the organoaluminum compound in the premixed composition of step (b) over a period of less than one hour at a temprature within the range 60° to 110° C.; the final concentration of violet $TiCl_3$ in the reaction mixture being at least 0.2 mol./liter.

4,195,070

PREPARATION OF A $MGCL_2$ SOLUTION FOR NALCO'S $MGCL_2$ PROCESS FROM $MGSO_4$ AND OTHER $MGSO_4$ SALTS

Ronald J. Allain, Richmond, Tex.; David G. Braithwaite, Golf, Fla., and Joseph P. Maniscalco, Sugarland, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 21, 1979, Ser. No. 22,397

Int. Cl.[2] C01F *5/34;* C01D *5/10, 5/18*

U.S. Cl. 423—498 **5 Claims**

1. A method for the beneficiation of mixed salts containing potassium and magnesium sulfates which allows the recovery of anhydrous $MgCl_2$ and the recovery of potassium sulfate, said method comprising the steps:

(a) Dissolving a mixed double salt containing magnesium and potassium sulfates in water at a temperature between 50° C. and 90° C. and then filtering the residue from the solution;

(b) Adding to and dissolving into the filtered solution of (a), a molar equivalent of potassium chloride, the molar equivalent calculated on the solubilized magnesium cation requirement for chloride ion, thereby forming a solution;

(c) Heating the solution produced in step (b) within the range of 50° C.–90° C. for a period of time to allow equilibrium to be established, thereby forming an equilibrated solution;

(d) Adding sufficient ethylene glycol to the equilibriated solution of (c) to fully dissolve all $MgCl_2$ calculated to be present, then removing from solution the K_2SO_4 which precipitated on the addition of said ethylene glycol;

(e) Distilling water from the solution of step (d) thereby forming an anhydrous $MgCl_2$ solution in ethylene glycol and a precipitate of K_2SO_4, then removing said precipitate from said solution;

(f) Combining the K_2SO_4 precipitate of steps (d) and (e) and washing said precipitates with sufficient water maintained below 70° C. to remove entrained ethylene glycol, and recovering the washed K_2SO_4;

(g) Treating the anhydrous $MgCl_2$ solution in ethylene glycol formed in step (e) with anhydrous ammonia to form a $MgCl_2$ ammonia complex which precipitates from the ethylene glycol solution;

(h) Removing the complex precipitate from the ethylene glycol and washing it with a low boiling solvent for ethylene glycol to remove any ethylene glycol entrained in the precipitate;

(i) Heating the magnesium chloride ammonia complex to drive off ammonia leaving as a finished product completely anhydrous magnesium chloride.

4,195,071

POLYETHERS TO OBTAIN ANHYDROUS MAGNESIUM CHLORIDE

Ronald J. Allain, Richmond, Tex.; David G. Braithwaite, Golf, Fla., and Joseph P. Maniscalco, Sugar Land, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 1, 1979, Ser. No. 16,710
Int. Cl.[2] C01F 5/34
U.S. Cl. 423—498 1 Claim

1. An improved process for producing anhydrous magnesium chloride of the type comprising:

A. Mixing together a magnesium chloride hydrate, said hydrate containing minor amounts of water-soluble sulfate and boron compounds as impurities with diethyl ether of tetraethylene glycol to prepare 0.1–6.0% by weight slurry of $MgCl_2$ in the diethyl ether of tetraethylene glycol and an azeotropic agent having a boiling point less than the diethyl ether of tetraethylene glycol in a quantity sufficient to remove water from said slurry;

B. Distilling water from said slurry wherein an anhydrous solution of $MgCl_2$ in diethyl ether of tetraethylene glycol containing the water-soluble sulfate and boron compounds as insoluble impurities is formed;

C. Separating said $MgCl_2$ solution from the insoluble impurities;

D. Adding to the $MgCl_2$ solution about 3.0 moles of ethylene glycol per mole of $MgCl_2$ present so as to prepare a $MgCl_2$.3 moles ethylene glycol complex precipitate;

E. Separating precipitate from the diethyl ether of tetraethylene glycol and recovering the precipitate;

F. Dissolving said precipitate in ethylene glycol to prepare a solution of the precipitate in ethylene glycol, said ethylene glycol being used in a quantity so as to prepare an ethylene glycol solution containing from 1 to 20% by weight $MgCl_2$;

G. Treating the ethylene glycol magnesium chloride solution with ammonia to form a magnesium chloride-ammonia complex which is insoluble in the ethylene glycol with the temperature of the ethylene glycol magnesium chloride solution being within the range of between −15° to 50° C.;

H. Separating the magnesium chloride-ammonia complex from the ethylene glycol;

I. Washing the magnesium chloride-ammonia complex with a polar solvent having a lower boiling point than ethylene glycol to remove any ethylene glycol entrained in the magnesium chloride-ammonia complex;

J. Heating the magnesium chloride-ammonia complex to a temperature sufficient to drive off the ammonia for a sufficient period of time to remove the ammonia, thereby forming anhydrous magnesium chloride; and then.

K. Recovering anhydrous magnesium chloride which has a magnesium oxide content of less than 0.8% by weight and which is substantially free of impurities,

the improvement which comprises substituting dibutyl ether of tetraethylene glycol for the diethyl ether of tetraethylene glycol.

4,195,072

STABILIZED PLATELET FACTOR 4 IMMUNOASSAY STANDARDS

Erwin F. Workman, Jr., Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 5, 1978, Ser. No. 922,135
Int. Cl.[2] G01N 33/16; A61K 43/00
U.S. Cl. 424—1 5 Claims

5. In a radioimmunoassay method for platelet factor 4 in blood plasma wherein concentrations of platelet factor 4 in standards are used to derive concentrations of platelet factor 4 in blood plasma by competitive binding of ^{125}I labeled platelet factor 4 and platelet factor 4 from test samples with platelet factor 4 antiserum, followed by precipitation and counting of bound ^{125}I labeled platelet factor 4, the improvement comprising using heparin stabilized platelet factor 4 standards and heparin stabilized ^{125}I labeled platelet factor 4.

4,195,073

RADIOIMMUNOASSAY OF ALPHA $_1$FETOPROTEIN

Edward S. Newman, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 846,089, Oct. 27, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 917,814
Int. Cl.[2] G01N 33/16; A61K 43/00; C07G 7/00
U.S. Cl. 424—1 4 Claims

1. In a radioimmunoassay to determine the alpha$_1$-fetoprotein content in an unknown comprising: forming a complex of the alpha$_1$-fetoprotein in said unknown with an antiserum; adding thereto radiolabeled alpha$_1$-fetoprotein; removing the resulting complex from solution; and measuring the amount of radiolabeled alpha$_1$-fetoprotein taken up in said complex against a standard, the improvement which comprises adding to said first complex radiolabeled alpha$_1$-fetoprotein purified by a process comprising:

(a) buffering a sample of a biological source material known to contain alpha$_1$-fetoprotein to a pH of about 7;

(b) subjecting said buffered sample to affinity chromatography by passage through a column containing an antibody specific for alpha$_1$-fetoprotein immobilized on a solid support and subsequently eluting the bound alpha$_1$-fetoprotein by treatment of the column with a suitable desorbing agent;

(c) removing substantially all of the albumin present in the eluate from step (b) by subjecting it to adsorption chromatography by passage through a column containing an adsorbent comprising an agarose gel covalently linked to dextran containing a blue chromophore;

(d) dialyzing the unabsorbed alpha$_1$-fetoprotein-containing solution from step (c);

(e) removing high molecular weight protein contaminants from the dialyzed solution from step (d) by subjecting it to gel filtration chromatography utilizing as the filtering material a hydrophilic, water-insoluble, cross-linked dextran polymer gel;

(f) treating the eluate containing alpha$_1$-fetoprotein from step (e) to remove protein contaminants by subjecting it to ion exchange chromatography utilizing as the filtering material a mixture of a cationic exchange resin and an anionic exchange resin;

(g) dialyzing the eluate containing alpha$_1$-fetoprotein from step (f);

(h) lyophilizing the dialyzed solution from step (g);

(i) disolving the powder formed in step (h) in a suitable buffer and subjecting the resulting to polyacrylamide gel electrophoresis.

4,195,074

PROCESS FOR PRODUCING A SOLUBLE RUBELLA ANTIGEN

John W. Safford, Jr., Wauconda, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 773,231, Mar. 1, 1977. This application Jan. 31, 1978, Ser. No. 873,940
Int. Cl.[2] C12K 1/04, 7/00; G01N 33/16; A61K 39/20
U.S. Cl. 424—12 2 Claims

1. A process for producing a soluble rubella antigen, said process comprising, in sequence:

(a) subjecting growth media of a tissue culture of rubella virus infected cells to chromatographic separation through a column consisting of a solid phase to which IgG, derived from human serum known to contain antibodies reactive with rubella antigens, has been convalently coupled;

(b) eluting from said column the rubella antigen materials bound to the IgG therein with a buffer having a pH of about 12;

(c) neutralizing the rubella antigen materials to a pH of about 8;
(d) subjecting the separated eluted rubella antigen materials to gel permeation chromatography to achieve material separation on the basis of molecular size;
(e) collecting the fractions containing said materials having a molecular weight of about 40,000 to about 60,000 daltons;
(f) isolating rubella antigen from said sized, separated eluted materials on the basis of relative reverse passive hemagglutination activity.

4,195,075

METHOD AND DEVICE FOR CONTROLLING INSECTS ON LIVESTOCK

William V. Miller, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 20, 1978, Ser. No. 944,513
Int. Cl.² A01K *13/00*
U.S. Cl. 424—14 **11 Claims**

1. An insect control device for attachment to cattle or other livestock comprising:
(a) a polymeric resin matrix having dispersed therein an insectically effective amount of a liquid, insecticidally-active isomer of alpha-cyano-3-phenoxybenzyl-alpha-isopropyl-4-chlorophenyl acetate, and
(b) an attachment means for affixing said polymeric resin matrix to said animal.

4,195,076

PROCESS FOR THE PREPARATION OF HEMAGGLUTININ FROM VIRAL SOURCES AND METHODS OF UTILIZING SAME

Robert Fontanges, Lyon, France, assignor to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

Division of Ser. No. 553,293, Feb. 26, 1975, Pat. No. 4,136,168. This application Sep. 25, 1978, Ser. No. 945,317
Claims priority, application France, Mar. 5, 1974, 74 07352
Int. Cl.² A61K *9/12, 39/18;* C12B *1/00*
U.S. Cl. 424—43 **16 Claims**

1. A process for the obtention of viral proteins from flu virus by submitting cultures of *Myxovirus Influenzae* to the action of an enzyme or a mixture of proteolytic enzymes obtained from cultures of *Streptomyces fradiae,* concentrating the fractions including neuraminidase and hemagglutinin by diafiltration in aqueous solution on a selectively permeable membrane with a reticulate structure capable of retaining molecules of molecular weight exceeding 10,000 to form a concentrate of a material having a molecular weight in excess of 10,000, collecting the concentrate retained by the membrane of the diafiltration cell, then submitting said concentrate to fractionation by physical methods to collect the fraction containing substantially the viral hemagglutinin.

4,195,077

DETERGENT COMPOSITIONS COMPRISING MODIFIED PROTEINS

Robert A. Marsh, Newcastle upon Tyne; Gordon J. Mackie, Cramlington, and Peter Hale, Whitley Bay, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 534,914, Dec. 20, 1974, Pat. No. 4,115,548. This application Jun. 26, 1978, Ser. No. 919,192
Claims priority, application United Kingdom, Jan. 18, 1974, 2366/74
The portion of the term of this patent subsequent to Sep. 19, 1995, has been disclaimed.
Int. Cl.² A61K *7/06*
U.S. Cl. 424—70 **4 Claims**

1. A composition for protecting keratinous material from the deleterious effects of detergent or from adverse climatic conditions, said composition comprising
(a) an effective amount of a modified protein selected from the group consisting of oxyethylated, oxypropylated, oxybutylated and N,N-dimethyl ethylene diamine modified gelatin, casein, and soy protein, said modified protein having a molecular weight greater than 5,000 and an isoionic point greater than 6;
(b) from 0.1% to 90% by weight of a surface-active agent; and
(c) a compatible carrier.

4,195,078

NABILONE GRANULATION

James W. Conine, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 9, 1979, Ser. No. 19,810
Int. Cl.² A61K *31/79*
U.S. Cl. 424—80 **2 Claims**

1. A method of formulating nabilone for oral administration to mammals which comprises dissolving nabilone and polyvinylpyrrolidone or polyethylene glycol in anhydrous ethanol and using the thus-formed viscous solution to granulate a pharmaceutically-acceptable ethanol-insoluble excipient by thoroughly mixing the solution with the excipient, and then drying the thus-formed granulation.

4,195,079

NEW POLYCYCLIC ETHER ANTIBIOTIC

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; John R. Oscarson, Pawcatuck; Liang H. Huang, East Lyme, all of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,901
Int. Cl.² A61K *35/00*
U.S. Cl. 424—122 **6 Claims**

1. The antibiotic Compound 51,532 when in the form as the free acid is soluble in chloroform, ethyl acetate and methylisobutyl ketone and insoluble in water; has a melting point of 117°–132° C.; an optical rotation of $[\alpha]_D^{25} = -11.0°$ at a concentration of 1% in chloroform; an average composition by weight of 62.83% carbon, 8.80% hydrogen and 28.37% oxygen (by difference); and when pelleted in KBr, exhibits characteristic absorption in the infrared region at the following wavelengths in microns: 2.88, 3.32, 5.75, 6.06, 6.80, 7.20, 7.90, 8.50, 9.03, 9.60, 10.12, 10.75 and 11.35.

4,195,080

INSECTICIDAL USE OF ORANGE JUICE ESSENCE OIL

Alberto P. Herrera, and Sebastian A. Vieto, both of P.O. Box 6614, Panama 5, Panama

Continuation of Ser. No. 846,252, Oct. 27, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,525
Int. Cl.² A01N *9/02*
U.S. Cl. 424—186 **6 Claims**

1. A method for destroying insects which comprises contacting the insects with effective concentrations of an insecticidal composition comprising as its active ingredient orange juice essence oil obtained by vaporization of orange juice and recovery of the essence oil from the vaporized orange juice.

4,195,081

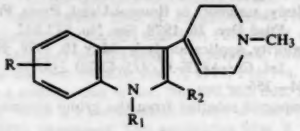
TREATING PSYCHIC DISORDERS WITH TETRAHYDROPYRIDIN-4-YL-1H-INDOLES

Lucien Nedelec, Le Raincy; Jacques Guillaume, Sevran, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jan. 10, 1979, Ser. No. 2,452
Claims priority, application France, Jan. 16, 1978, 78 01084
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 **4 Claims**

1. A method of treating psychic disorders in warm-blooded

animals comprising administering to warm-blooded animals an amount of at least one compound of the formula



wherein R is selected from the group consisting of hydrogen and methoxy, R_1 and R_2 are individually selected from the group consisting of hydrogen and methyl and their non-toxic, pharmaceutically acceptable acid addition salts sufficient to relieve psychic disorders.

4,195,082

COMBATING ARTHROPODS WITH O-ALKYL-O-TRIFLUOROMETHYLSULPHONYLPHENYL-THIONO (THIOL)-PHOSPHORIC ACID ESTERS

Hellmut Hoffmann, Wuppertal; Erich Klauke, Odenthal, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

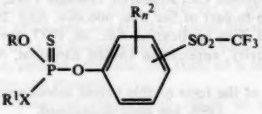
Filed Mar. 3, 1978, Ser. No. 883,078

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714038

Int. Cl.[2] A01N *9/36;* **C07F** *9/165*

U.S. Cl. 424—216 **10 Claims**

1. An O-alkyl-O-trifluoromethylsulphonylphenylthiono (thiol)-phosphoric acid ester or ester-amide of the formula



in which

R and R^1 each independently is alkyl,

R^2 in hydrogen, halogen, alkyl or nitro,

n is 1, 2, 3 or 4,

X is oxygen, sulphur or NR^3, and

R^3 is hydrogen or alkyl.

9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of an ester according to claim 1, in admixture with a diluent.

4,195,083

VETERINARY COMPOSITIONS AND METHOD FOR CONTROLLING ANTHROPOD ECTOPARASITES

John Hoy, 32 Becker St.; Gordon N. Emby, 16 Myrtle Ave. Post Office North Rand, both of, Johannesburg, Transvaal, and Edgar F. Meerholz, 22 Gloucester Ave., Sandringham, Johannesburg, Transvaal, all of South Africa

Continuation of Ser. No. 569,674, Apr. 21, 1975, abandoned, which is a continuation of Ser. No. 284,404, Aug. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 855,556, Sep. 5, 1969, abandoned. This application Jun. 7, 1978, Ser. No. 913,353

Claims priority, application South Africa, Sep. 11, 1968, 685864

Int. Cl.[2] A61K *31/675, 31/665, 31/66*

U.S. Cl. 424—200 **8 Claims**

1. A method for controlling arthropod ectoparasites of mammals infected with same which comprises contacting said mammals with an emulsion wash consisting of a non-aqueous pesticidal concentrate being substantially free of solvent therefor, and sufficient water to provide a total pesticide compound content of from 0.005 to 0.5 parts by weight per 100 parts by volume of said emulsion wash, wherein said non-aqueous pesticidal concentrate consists of: (a) from 65 to 95% by weight of a liquid pesticide compound or a liquid mixture of a liquid pesticide compound and a solid pesticide compound, said pesticide compound being effective for the control of arthropod ectoparasites of mammals, said liquid pesticide compound being selected from 2 -chloro-1 -(2,4 -dichlorophenyl) vinyl diethyl phosphate; O,O,O'O-tetraethyl S,S'-methylene-diphosphorodithioate; 2,3 -p-dioxanedithiol S,S-bis (O,O-diethyl phosphorodithioate); O,O-diethyl-O, 2 -isopropyl-4 -methyl-6-pyrimidyl phosphorothioate; O,O-diethyl O-2,4-dichlorophenyl phosphorothioate; O,O-diethyl S-(p-chlorophenylthio) methyl phosphorodithioate; O,O-diethyl O-4-bromo-2, 5-dichlorophenyl phosphorothioate; O,O-dimethyl O-(3-methyl-4-nitrophenyl) phosphorothioate; O,O-dimethyl O-1,2-dibromo-2,2-dichloroethyl phosphate; or dimethyl 3-methyl-4-methylthiophenyl phosphorothioate; and (b) an effective amount of at least one emulsifier for effecting emulsification of said pesticide compound in water.

4,195,084

TASTE-STABLE AQUEOUS PHARMACEUTICAL SUSPENSION OF TALL OIL SITOSTEROLS AND A METHOD FOR THE PREPARATION THEREOF

John T. H. Ong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 757,711, Jan. 7, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 918,113

Int. Cl.[2] A61K *31/56*

U.S. Cl. 424—238 **11 Claims**

1. A taste-stable aqueous pharmaceutical suspension for oral administration to reduce hypercholesteremia comprising: (a) a pharmaceutically active amount of finely ground tall oil sitosterols; (b) a pharmaceutically acceptable chelating agent in an amount sufficient to inhibit oxidative degradation of the tall oil sitosterols; (c) sodium carboxymethylcellulose; (d) sorbitol; (e) a surfactant selected from the class consisting of: polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene (20) sorbitan monopalmitate, polyoxyethylene (20) sorbitan monooleate, polyoxyethylene (20) sorbitan monostearate, and sodium lauryl sulfate; (f) simethicone; and, (g) water.

4,195,085

COMPOSITIONS AND METHODS FOR TREATING GLAUCOMA BY THE TOPICAL ADMINISTRATION OF T-BUTYLAMINO-3-(4-MORPHOLINO-1,2,5-THIADIAZOL-3-YLOXY-2-PHOPANOL HYDROGEN MALEATE

Clement A. Stone, Blue Bell, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 793,817, May 4, 1977, abandoned, which is a continuation of Ser. No. 617,118, Sep. 26, 1975, abandoned. This application Aug. 29, 1978, Ser. No. 937,696

Int. Cl.[2] A61K *31/535*

U.S. Cl. 424—248.51 **7 Claims**

1. A method for treating glaucoma and for lowering intraocular pressure which comprises topically applying to the glaucomatous eye an intraocular pressure lowering effective amount of t-butylamino-3-(4-morpholino-1,2,5-thiadiazol-3-yloxy)-2-propanol hydrogen maleate.

4,195,086

6-BRANCHED CHAIN ALKYL SUSTITUTED ERGOT ALKALOIDS

Theodor Fehr, Dornach, and Paul Stadler, Biel-Benke, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 762,647, Jan. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 587,289, Jun. 16, 1975, abandoned. This application Jul. 26, 1978, Ser. No. 928,199

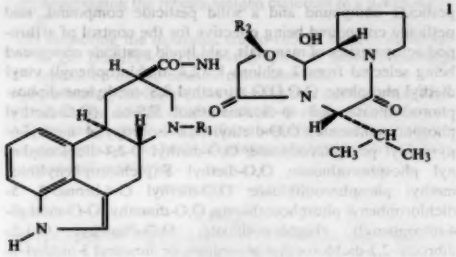
Claims priority, application Switzerland, Jun. 21, 1974, 8533/74

Int. Cl.[2] C07D *519/02*

U.S. Cl. 424—250 **18 Claims**

1. A compound of formula I,

1



wherein

R_1 is a branched chain alkyl of 3 to 5 carbon atoms, branched at the α-position to the nitrogen to which it is bound, and

R_2 is methyl or ethyl,

or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition useful in treating migraine comprising 0.1 to 3 milligrams of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

4,195,087

DERIVATIVES OF NAPHTHYRIDINE

Chaim Simonovitch, Rishon le Zion, Israel, assignor to Abic, Ltd., Ramat Gan, Israel

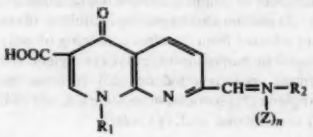
Filed Dec. 6, 1977, Ser. No. 857,900

Claims priority, application Israel, Dec. 10, 1976, 51092

Int. Cl.[2] C07D *471/04*

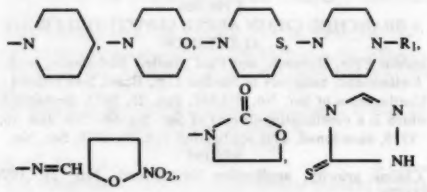
U.S. Cl. 424—256 **26 Claims**

1. 3-Carboxy-4-oxo-1,40dihydro-1, 8-napthyridines of the formula



wherein R_1 is selected from the group consisting of straight and branched alkyl of 1-7 carbon atoms and cycloalkyl, Z stands for oxygen, n is 0 or 1, and R_2 is selected from the group consisting of the group OH; the group C_6H_5; the group $—NHR_1$ wherein R_1 has the same definition as above; the group

wherein R_3 is selected from the group consisting of straight and branched alkyl of 1-7 carbon atoms, cycloalkyi, NH_2, $NHNH_2$, OR_1 wherein R_1 has the same definition as above, phenyl, phenyl—OH and phenyl—NO_2 and wherein R_4 stands for O or NH; the group $C_6H_5—R_1$ wherein R_1 has the same definition as above; the group $C_6H_5—Hal$ wherein Hal is a halogen; and a heterocyclic group selected from the group consisting of



wherein R_1 has the same definition as above; and physiologically acceptable salts thereof.

4,195,088

1,3-DIHYDRO-IMIDAZO-(4,5-B)-PYRIDIN-2-ONES

Fernando Barzaghi, Monza, and Mario Bianchi, Carate Brianza, both of Italy, assignors to Roussel Uclaf, Paris, France

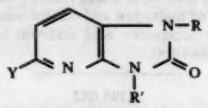
Filed Dec. 26, 1978, Ser. No. 972,942

Claims priority, application Italy, May 10, 1978, 49289 A/78

Int. Cl.[2] A61K *31/435*; C07D *235/00*

U.S. Cl. 424—256 **26 Claims**

1. A compound selected from the group consisting of the formula



wherein R is alkyl of 1 to 3 carbon atoms and R' is pyridyl and Y is selected from the group consisting of hydrogen and chlorine and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An antiulcerogenic and antisecretic composition comprising an antiulcerogically and antisecretically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

4,195,089

SYNERGISTIC COMPOSITION FOR MALARIA

William H. G. Richards, Orpington, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 606,004, Aug. 20, 1975, Pat. No. 4,031,220. This application Apr. 28, 1977, Ser. No. 791,857

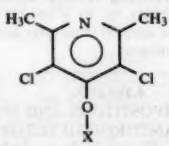
Claims priority, application United Kingdom, Aug. 20, 1975, 36523/75

The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.

Int. Cl.[2] A61K *31/47, 31/44*

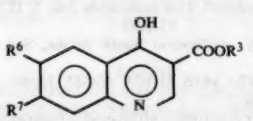
U.S. Cl. 424—258 **3 Claims**

1. A discrete unit dose pharmaceutical composition in the form of a tablet suitable for administration to a mammal from the species man which might be exposed to or suffering from malaria comprising a compound of formula (I):



(I)

wherein X is hydrogen, an alkali metal, the ammonium radical or a group $H(CH_2)_nCO-$, where n is an integer from 0 to 3, or a pharmaceutical or pharmacologically acceptable acid addition salt thereof when X is hydrogen in combination with a compound of formula (II):



(II)

wherein R^6 is n-decyloxy, R^7 is ethoxy and R^3 is ethyl or a pharmaceutically and pharmacologically acceptable acid addition salt thereof, together with a suitable carrier therefor; said composition containing a compound of formula (I) and a compound of formula (II), in amounts effective to treat man, in a weight by weight ratio (calculated as the base) in the range of 40:1 to 5:1 respectively.

4,195,090
2-(3-AMINO-2-HYDROXY-PROPOXY)PYRIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS THEREWITH

Jürg Frei, Schönenbuch; Knut A. Jaeggi, Basel; Franz Ostermayer, Riehen, and Herbert Schröter, Füllinsdorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

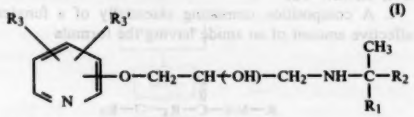
Division of Ser. No. 757,529, Jan. 7, 1977, Pat. No. 4,115,575, which is a continuation of Ser. No. 590,363, Jun. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 442,711, Feb. 14, 1974, abandoned. This application Mar. 3, 1978, Ser. No. 883,434

Claims priority, application Switzerland, Feb. 20, 1973, 2444/73; Finland, Jan. 23, 1974, 193/74

Int. Cl.[2] A61K *31/44;* **C07D** *213/46*

U.S. Cl. 424—263 **21 Claims**

1. A compound of the formula



(I)

wherein

R_1 denotes hydrogen or methyl,

R_2 denotes lower alkyl or phenyl-lower alkyl,

R_3 denotes lower alkyl, lower alkoxy, lower alkenyloxy, lower-alkylcarbonyl, lower alkylaminocarbonyl, lower-alkyleneamino-carbonyl, lower alkyl-carbonylamino, lower alkoxy-lower alkyl, lower alkyl-carbonylamino lower alkyl, di-(lower alkyl)-amino, amino-lower alkyl, hydroxy-lower alkyl, lower alkoxycarbonylamino-lower alkyl, halogen, cyano, nitro, hydroxyl or phenyl,

R_3' denotes hydrogen, lower alkyl, lower alkoxy or halogen, in the form of an isomer mixture (racemate mixture), pure racemate, optical antipode, N-Oxide or a therapeutically acceptable salt thereof.

2. A pharmaceutical preparation useful as adrenergic β-receptor blocking agent in the treatment of angina pectoria, hypertonia and disturbances of the rhythm of the heart comprising a therapeutically effective amount of a compound of the formula (I) as claimed in claim 1, or a therapeutically acceptable salt of such a compound, together with a pharmaceutically usable excipient.

4,195,091
APPETITE STIMULATING PYRROLO[2,1-B][3]BENZAZEPINES

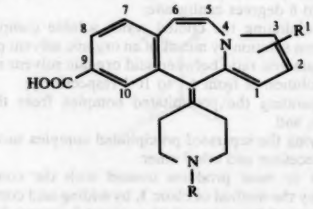
Joseph G. Atkinson, Montreal; Patrice C. Belanger, Dollard des Ormeaux, both of Canada; David C. Remy, North Wales, and Clarence S. Rooney, Worcester, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 15, 1978, Ser. No. 960,812

Int. Cl.[2] A61K *31/445;* **C07D** *487/04*

U.S. Cl. 424—267 **7 Claims**

6. A method of stimulating the appetite of a patient in need of such treatment which comprises the administration to a patient an effective appetite stimulating amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

R^1 is hydrogen, carboxy, lower alkyl; and

R is lower alkyl or lower(cycloalkylalkyl).

4,195,092
2-(SUBSTITUTED AMINO)-N-(3-SUBSTITUTED PHENYL)-2-IMIDAZOLINE-1-CARBOTHIOAMIDES

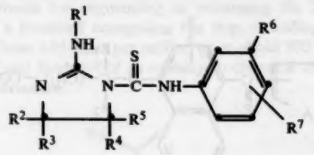
Terry W. Balko, Waldron, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 27, 1977, Ser. No. 865,091

Int. Cl.[2] A61K *31/415;* **C07D** *233/50*

U.S. Cl. 424—273 R **89 Claims**

1. A compound having the formula:



wherein R^1 represents

(A) C_1–C_{18} alkyl;

(B) C_2–C_{18} alkenyl;

(C) C_4–C_{18} alkadienyl;

(D) C_3–C_{12} cycloalkyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(E) C_5–C_{12} cycloalkenyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(F) C_6–C_{12} cycloalkadienyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(G) phenyl, optionally substituted with from one to three groups selected from the group consisting of

(1) C_1–C_6 alkyl,

(2) C_1–C_6 alkoxy,

(3) C_1–C_6 alkylthio,

(4) trifluoromethyl,

(5) halo, and

(6) cyano;

(H) (cycloalkyl)alkyl, containing no more than about 18 carbon atoms, in which the cycloalkyl moiety is as defined hereinabove;

(I) phenylalkyl, containing no more than about 18 carbon atoms, in which the phenyl moiety is as defined hereinabove;

(J) diphenylalkyl, containing no more than about 18 carbon atoms, in which each phenyl moiety is as defined hereinabove;

R^2 and R^3 independently are selected from the group consisting of

(A) hydrogen,

(B) C_1–C_3 alkyl, and

(C) phenyl, with the proviso that when one of R^2 and R^3 is phenyl, the other of R^2 and R^3 is hydrogen;

R^4 and R^5 independently are selected from the group consisting of

(A) hydrogen,

(B) C_1–C_3 alkyl, and

(C) phenyl, with the proviso that when one of R^4 and R^5 is phenyl, the other of R^4 and R^5 is hydrogen;

R^6 represents

(A) halo,

(B) trifluoromethyl,

(C) cyano, or

(D) 1,1,2,2-tetrafluoroethoxy;

R^7 represents hydrogen, C_1–C_3 alkyl, or halo, with the proviso that R^7 cannot be in the 2-position.

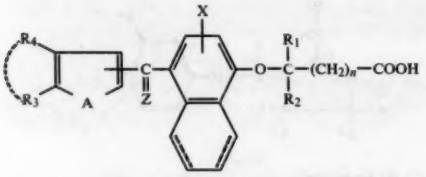
30. A method for reducing or eradicating a population of the insect species *Epilachna varivestis* which comprises administering to the insect by ingestion an insecticidally-effective amount of a compound of claim 1.

4,195,093
FUROYL- AND THENOYL-ARYLOXYALKYL CARBOXYLIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR USE IN THERAPY

Jacqueline S. Laforest, nee Boutillier du Retail, Vincennes; Sylviane S. J. Mignonac, nee Mondon, Chilly-Mazarin; Germaine Thuillier, nee Nachmias, Paris, and Pierre A. R. Bessin, Chilly-Mazarin, all of France, assignors to Albert Rolland S.A., Paris, France

Filed Mar. 24, 1978, Ser. No. 889,986
Claims priority, application France, Apr. 6, 1977, 77 10405
Int. Cl.[2] A61K *31/38, 31/34;* **C07D** *333/24, 307/77*
U.S. Cl. 424—275 **10 Claims**

1. A compound of the general formula I



(I)

wherein

n represents 0, 1 or 2,

A represents an oxygen or sulphur atom,

Z represents an oxygen atom or a hydroxyimino group,

X represents a hydrogen or halogen atom,

the dotted lines represent bonds which may be unsaturated or saturated,

each of R_1 and R_2, which may be the same or different, represents a hydrogen atom or an alkyl group, and

R_3 represents a hydrogen or halogen atom, or a methyl group, and

R_4 represents a hydrogen atom, or

R_3 and R_4 together with the two carbon atoms to which they are attached represent a benzene ring, or a salt thereof with a pharmaceutically acceptable base.

4,195,094
ZINC CONTAINING HYPOGLYCEMIC AGENTS

Charles L. Fox, Jr., Sherman, Conn., assignor to Research Corporation, New York, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,864
Int. Cl.[2] C01B *25/08, 35/02;* **C07F** *3/06*
U.S. Cl. 424—289 **10 Claims**

1. A compound useful as an oral hypoglycemic agent which comprises a zinc salt of a sulfonyl urea compound selected from the group consisting of glyburide, glibornuride and tolbutamide.

7. A method of lowering blood sugar levels in warm-blooded animals which comprises administering orally to said animals an effective amount of a compound in accordance with claim 1.

4,195,095
TOPICAL APPLICATION OF THIOGLYCOLIC ACID IN THE TREATMENT OF DERMATOLOGICAL CONDITIONS

Aaron L. Sheffner, 18 Trombley Dr., Livingston, N.J. 07039

Division of Ser. No. 813,750, Apr. 4, 1969, Pat. No. 4,107,330. This application Aug. 14, 1978, Ser. No. 933,506
The portion of the term of this patent subsequent to Aug. 15, 1997, has been disclaimed.
Int. Cl.[2] A61K *31/19*
U.S. Cl. 424—317 **13 Claims**

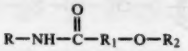
1. A process for the treatment of dandruff comprising applying to the dandruff effected skin of a person suffering therefrom, a dandruff alleviating amount of a topical composition containing about 0.1 to about 10% by weight of thioglycolic acid or a pharmaceutically acceptable salt thereof, and keeping said composition in contact with the affected skin for several hours.

4,195,096
CARBOXYLIC AMIDES AS FUNGICIDES TO EUMYCOTINA IN PHANEROGAMIA PLANT LIFE

David E. Graham, Westfield, N.J., and Joseph P. Copes, deceased, late of Easton, Pa. (by Anna M. Copes, legal representative), assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 758,585, Jan. 12, 1977. This application May 23, 1978, Ser. No. 908,715
Int. Cl.[2] A01N *9/20*
U.S. Cl. 424—320 **9 Claims**

1. A composition consisting essentially of a fungicidally effective amount of an amide having the formula



wherein R is an organic radical of from 4 to 20 carbon atoms and is selected from the group consisting of an acyclic alkyl radical, an alkenyl radical having one or more doubly bonded carbon atoms, a mono- or di-fluorinated benzyl radical and a mono- or di-chlorinated benzyl radical; R_1 is alkylene of from 1 to 6 carbon atoms and R_2 is alkyl of from 1 to 6 carbon atoms substituted with a hydroxy, carboxylate or a halo carboxylate group, and an inert carrier therefor.

4,195,097
METHOD FOR PREPARING ENZYMAYTIC COMPOSITION FOR ACCELERATION OF AGEING OF MEAT PRODUCTS

Leonid I. Stekolnikov; Boris A. Sevastyanov, both of Moscow; Gennady G. Shilov, Rostov-na-Donu; Anatoly A. Belousov, Moscow, and Nikolai D. Mamonov, Rostov-na-Donu, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Myasnoi Promyshlennosti, Moscow, U.S.S.R.

Filed Mar. 8, 1978, Ser. No. 884,540
Claims priority, application U.S.S.R., Mar. 14, 1977, 2464202
Int. Cl.[2] A22C *11/00;* **A23P** *1/00;* **A23L** *1/31*
U.S. Cl. 426—61 **9 Claims**

1. A method for preparing an enzymatic composition for accelerating the aging of meat comprising:

(A) Separately dissolving 4 to 6 parts by weight hyaluronidase and 0.5 to 1.5 parts by weight serum albumin in water having a pH of from 2.0 to 2.5;

(B) Mixing said solution of hyaluronidase with said solution of serum albumin, thereby obtaining a water soluble complex of hyaluronidase and said serum albumin in solution and suspended particles of unreacted ingredients;

(C) Separating the water soluble complex solution from the suspended unreacted ingredients;

(D) Cooling said separated water soluble complex solution to 4 to 6 degrees centigrade;

(E) Precipitating the cooled water soluble complex from aqueous solution by means of an organic solvent present in a volumetric ratio between said organic solvent and aqueous solution of from 4:1 to 10:1 respectively;

(F) Separating the precipitated complex from the liquid phase; and

(G) Drying the separated precipitated complex successively with acetone and ethyl ether.

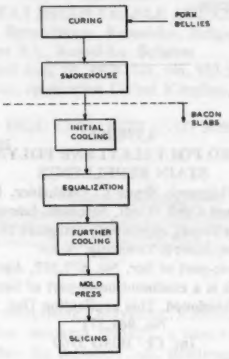
9. Meat or meat products treated with the composition prepared by the method of claim 1, by adding said composition in an amount of from about 0.05 to about 2 percent by weight of the meat or meat products.

4,195,098

METHOD OF PREPARING BACON SLABS FOR SLICING

Carl W. Otto, Narrangansett, R.I., assignor to Airco, Inc., Montvale, N.J.

Filed May 30, 1978, Ser. No. 910,918
Int. Cl.[2] A23L *3/36*
U.S. Cl. 426—513 9 Claims



1. A method of preparing bacon slabs for slicing comprising the steps of cooling said slabs from a temperature of at least 90° F. to an average temperature of about 45°–50° F. thereby avoiding physical separation of the fat from the lean portions in said slabs, holding said cooled slabs under a temperature of about 40°–45° F. to substantially equalize temperature throughout said cooled slabs; further cooling said slabs to an average slab temperature of approximately 22°–26° F. without freezing said slabs and thereafter molding said further cooled slabs for slicing.

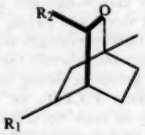
4,195,099

USE OF 2-OXABICYCLOOCTANE DERIVATIVES, FOR AUGMENTING OR ENHANCING THE FLAVOR OF FOODSTUFFS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,128
Int. Cl.[2] A23L *1/226, 1/235*
U.S. Cl. 426—536 18 Claims

1. A process for augmenting or enhancing the organoleptic properties of a foodstuff comprising the step of adding to said foodstuff from 0.05 parts per million up to about 500 parts per million of a cyclic chemical compound having the structure:



wherein R_1 is selected from the group consisting of hydrogen and methyl and R_2 is C_3–C_5 alkyl or alkenal.

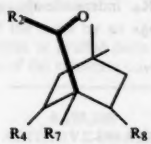
4,195,100

USE OF 2-OXABICYCLOOCTANE DERIVATIVES IN AUGMENTING OR ENHANCING THE FLAVOR OF A FOODSTUFF

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 953,128, Oct. 20, 1978. This application Feb. 16, 1979, Ser. No. 12,695
The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.
Int. Cl.[2] A23L *1/226, 1/235*
U.S. Cl. 426—536 16 Claims

1. A process for augmenting or enhancing the flavor or aroma of a foodstuff comprising the step of adding to said foodstuff from 0.05 parts per million up to about 500 parts per million of said foodstuff of an oxabicyclo chemical compound having a structure:



wherein R_2 is C_2–C_5 alkyl or alkenyl; R_4 is hydrogen, methyl or ethyl; R_7 is hydrogen or methyl; and R_8 is hydrogen or methyl with the proviso that at least two of R_4, R_7 and R_8 are not hydrogen.

4,195,101

2',6'-DIHYDROXY-9-(2,5-DIHYDROXYPHENYL)OCTYLPHENONE AND ITS USE AS AN ANTI-OXIDANT

Yutaka Saito, Funabashi; Yukichi Kimura, Narashino; Tomonori Sakamoto, Chiba; Masafu Shinbo, and Shoji Kameyama, both of Odawara, all of Japan, assignors to The Lion Dentifrice Co. Ltd., Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 946,968
Claims priority, application Japan, Nov. 22, 1977, 52-140372; Aug. 22, 1978, 53-102044
Int. Cl.[2] A23L *1/28*
U.S. Cl. 426—546 3 Claims

1. A method for preventing oxidation of a foodstuff comprising admixing pure 2',6'-dihydroxy-9-(2,5-dihydroxyphenyl)-octylphenone in the foodstuff in an amount effective to prevent the oxidation of the foodstuff.

4,195,102

AQUEOUS POLYESTER COATINGS

Edward T. Turpin, Elyria, Ohio, assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 880,616, Feb. 23, 1978, Pat. No. 4,156,667, which is a continuation-in-part of Ser. No. 772,762, Feb. 28, 1977, abandoned. This application Dec. 6, 1978, Ser. No. 966,818
Int. Cl.[2] B05D *1/06, 3/02*
U.S. Cl. 427—27 4 Claims

1. A process for coating a substrate with a waterdispersed, heat curable coating composition, comprising

providing a coating composition substantially free of a volatile organic cosolvent during heat curing, comprising an aqueous dispersion of (a) polyester resin, (b) aminoplast crosslinking resin, and (c) a reactive allyl ether alcohol having a molecular weight between 200 and 1200 for dispersing the polyester resin and aminoplast resin in water and cross-linking within the cured film upon heat curing said coating composition, wherein the weight ratio of said polyester and allyl ether is between 0.5/1 and 15/1, said allyl ether alcohol having the structure

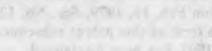
where
R_1 is hydrogen or a methyl group; and
R_2 is a divalent or trivalent hydrocarbon group and

$m=1$ or 2

$n=1$ or 2

$(n)(x)=1$–18, inclusive, or

R_2 is a divalent polyoxyalkylene group of the structure



where R_3 and R_4, independently, are hydrogen or a methyl group,

$m=1$

$n=1$

$x+y=2$–18, inclusive, and

applying said coating composition to a substrate and heat curing the coating at temperatures between 120° C. and 300° C. without substantial volatilization of said allyl ether to provide a cured cross-linked film on the substrate.

4,195,103

METHOD OF DESENSITIZING CARBONLESS PAPER

John C. H. Chang, Naperville, Ill., assignor to Wallace Business Forms, Inc., Hillside, Ill.

Filed Aug. 30, 1978, Ser. No. 937,956
Int. Cl.[2] B05C *5/00, 17/04*
U.S. Cl. 427—54.1 **7 Claims**

1. A method of desensitizing a carbonless paper having as a color developer thereof a member selected from the class consisting of an acid clay, a phenolic novolac resin and a metal salt of an organic carboxylic acid, comprising applying from about 10 to about 35 parts N-vinylpyrrolidone, from about 65 to about 90 parts of a free-radical co-polymerizable compound having at least one terminal ethylenic group per molecule and from about 1% to about 10% of the combined weight of said N-vinylpyrrolidone and said free-radical copolymerizable compound of a photoinitiator to selected portions of said paper and thereafter subjecting said paper to ultraviolet radiation.

4,195,104

VIDEOJET INK COMPOSITION

David A. Fell, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 909,469, May 25, 1978. This application Feb. 21, 1979, Ser. No. 13,406
Int. Cl.[2] B05D *1/36, 5/00*
U.S. Cl. 427—261 **3 Claims**

1. A method for applying indicia to a substrate which comprises the steps of:

(1) providing and ink composition comprising a solution of (a) an epoxy-phenolic binder resin (b) at least one dye that is soluble and compatible with the components of the composition and (c) a solvent blend consisting essentially of from about 25 to 40% of an alcohol having 1 to 3 carbon atoms and mixtures thereof, from about 5 to 20% water, from about 25 to 40% of an aliphatic ketone having 3 to 8 carbon atoms and from about 0 to 20% of a lower alkylene glycol ether;

(2) applying said ink composition by a jet printing apparatus to the surfaces of a substrate selected from the group consisting of glass, ceramic, polymer coated wire and coated or uncoated aluminum or steel to form printed indicia thereon.

4,195,105

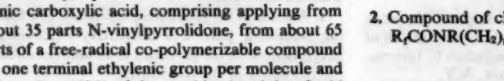
FLUORINATED POLYALKYLENE POLYAMIDES AS STAIN REPELLENTS

Frank Mares, Whippany; Bryce C. Oxenrider, Florham Park, both of N.J., and Cyril Woolf, deceased, late of Morristown, N.J. (by Helga Woolf, executrix), assignors to Allied Chemical Corporation, Morris Township, N.J.

Continuation-in-part of Ser. No. 677,357, Apr. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,929, Jun. 30, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,371
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—386 **13 Claims**

1. A compound capable of imparting oil and water resistance to nylon fiber upon applying said compound to the surface of said fiber by contact of a solution or dispersion of the compound in liquid medium with the surface of the fiber and then annealing the resulting fiber; said compound being a poly-(C_8 to C_{10}) alkylene polyamine containing a primary or methyl substituted nitrogen at each end of a chain, said terminal nitrogen atoms being acylated by fluorinated carboxylic acid groups; and said polyalkylene polyamine containing at least one interior nitrogen atom, acylated by a dibasic acid moiety of the group consisting of (C_4 to C_{14}) alkane dioic acid moieties and thiocarbonic acid moieties $-C(=O)S-$ and $-CS_2-$; wherein the improvement comprises a radical, terminally attached to said acylating dibasic acid moiety, of the group consisting of the esterifying radicals $-CH_2CH_2OH$, $-CH_2CH(CH_3)OH$, $-CH_2CHOHCH_2X$ (X being halogen or cyano), or

2. Compound of claim 1 having the formula:



(1) Independently at each occurrence, R_f is highly fluorinated radical containing at least two and up to 20 perfluorinated carbon atoms;

(2) Independently at each occurrence, R is hydrogen or methyl;

(3) Independently at each occurrence, n is an integer from 2 to 10; and $(CH_2)_n$ is a straight chain or a chain containing propyl substituent radicals;

3. Compound of claim 1 wherein the polyalkylene polyamine moiety is a triazaalkane having its three nitrogen atoms arranged in a straight carbon-nitrogen chain, terminated at both ends by nitrogen atoms and having a C_2 to C_4 alkylene radical separating the interior nitrogen atom from each of the terminal nitrogen atoms; and wherein the fluorinated radicals in the carboxylic acid groups acylating said terminal nitrogen atoms have the formula $F(CF_2)_m$ or $(CF_3)_2CFO(CF_2)_m$, wherein independently at each occurrence, m is an integer from 5 to 10 and m' is an integer from 2 to 10.

9. Process of incorporation, with a nylon fiber, a compound of claim 3 comprising contacting a solution or dispersion of said compound in liquid medium with the surface of the fiber and then annealing the resulting fiber, whereby the fiber acquires repellency against water and oil.

12. Process of claim 9 wherein the fiber is composed of poly-E-caproamide and wherein the fiber, in the form of a fabric, is impregnated with a polyfunctional epoxide compound or isocyanate and with a tertiary amine catalyst, included in the liquid treating medium.

4,195,106

HEAT RECOVERABLE ARTICLE

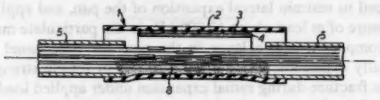
Jacques H. F. Brusselmans, Kessel-Lo, Belgium, assignor to N.V. Raychem S.A., Kessel-Lo, Belgium

Filed Aug. 14, 1978, Ser. No. 933,599

Claims priority, appilcation United Kingdom, Aug. 22, 1977, 35161/77

Int. Cl.[2] H02G *13/06*; B32B *31/00*; B29C *27/00*

U.S. Cl. 428—35 **15 Claims**



1. An article comprising a polymeric, hollow, heat-recoverable member that recovers radially, a heat-softenable insert positioned within the member, and, positioned between the heat-recoverable member and the insert, a separate thermal barrier comprising a polymeric material, the barrier being capable of preserving its structural cohesion at the application temperature of the article without preventing recovery of the heat-recoverable member.

11. A method of covering a heat-sensitive substrate comprising the steps of:

(a) placing about the substrate an article comprising a polymeric, heat-recoverable member containing both a heat-softenable insert and a separate thermal barrier between the member and the insert, the barrier being capable of preserving its structural cohesion at the application temperature of the article without preventing recovery of the heat-recoverable member; and

(b) applying heat from a heat source to the article to soften the insert and to recover the member, the heat barrier allowing sufficient heat to be transferred to soften the insert but preventing heat from damaging the heat-sensitive substrate, either by contact with the hot, heat-recovered member, or direct from the heat source.

4,195,107

SELF-ADHESIVE PLASTIC TILE

Walter C. Timm, New Windsor, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 536,835, Dec. 27, 1974, abandoned. This application Apr. 26, 1978, Ser. No. 899,899

Int. Cl.[2] A61F *13/02*; E04C *2/20*

U.S. Cl. 428—40 **10 Claims**

1. Plastic tile suitable for adhesion to walls, said plastic tile comprising vinyl chloride resin selected from the group consisting of vinyl chloride vinyl acetate copolymer, vinyl chloride homopolymer and mixtures, thereof, filler, and between about 10 and about 60 pounds per hundred pounds vinyl chloride resin of a plasticizer at least about 90% of which consists of butyl benzyl phthalate, said plastic tile having a hot-melt type pressure-sensitive adhesive coating, said adhesive coating comprising, as a resin ingredient, at least about 25 percent by weight of a vinylic copolymer having less than about 50 percent of styrene-type units and more than about 50 percent of units selected from the group consisting of isoprene, butadiene, and mixtures thereof.

4,195,108

ELECTROLITHOGRAPHIC PROCESS WHICH MAKES IT POSSIBLE TO IMPROVE THE SENSITIVITY OF MASKING RESINS, AND A MASK OBTAINED BY THIS KIND OF PROCESS

Maryse Gazard, and Jean-Claude Dubois, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 1, 1978, Ser. No. 901,617

Claims priority, application France, May 3, 1977, 77 13344

Int. Cl.[2] B05D *3/06*

U.S. Cl. 428—195 **7 Claims**

1. An electron lithographic process which makes it possible to improve the sensitivity of masking resins, comprising:

(a) deposition upon a substrate which is to be etched, of a solution of said polymer in a solvent, this in such a manner as to produce a layer of uniform thickness;

(b) drying in order to eliminate the solvent;

(c) irradiation of the polymer by electrons having a given energy;

(d) copolymerisation by the grafting of a monomer to the initial polymer, said copolymerisation only taking place in the irradiated areas;

(e) developing of the mask by an agent which selectively dissolves the initial or grafted parts of the polymer;

(f) heat treatment of the substrate covered by the mask.

4,195,109

POLYMERIC ADHESIVE-COATED PAPER AND GYPSUM WALLBOARD PREPARED THEREWITH

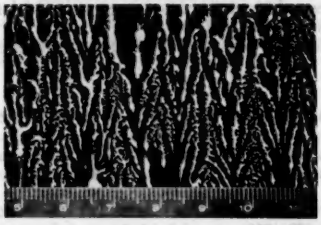
William J. Long, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Continuation-in-part of Ser. No. 799,412, May 23, 1977, Pat. No. 4,119,752, which is a division of Ser. No. 491,097, Jul. 23, 1974, Pat. No. 4,051,291, which is a continuation of Ser. No. 221,324, Jan. 27, 1972, abandoned. This application Jun. 22, 1978, Ser. No. 918,181

The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.

Int. Cl.[2] B32B *7/14*, *31/12*

U.S. Cl. 428—198 **20 Claims**



1. In a panel comprising a rehydrated gypsum core securely bonded to a paper cover sheet by an adhesive disposed at the interface of said core and said cover sheet, the improvement wherein said adhesive is applied to said cover sheet as a latex or aqueous suspension of a polymer and is disposed at limited areas of said interface, the amount of adhesive present at said limited areas being sufficient to provide secure bonding of said paper cover sheet to said gypsum core when said adhesive has set, and wherein substantial areas of said interface are free of said adhesive, said free areas being sufficient to provide wet bonding of said cover sheet to said core prior to the setting of said adhesive, the portion of said paper cover sheet spaced from said interface being substantially free of adhesive.

10. A process for producing gypsum wallboard comprising the followjng steps:

a. providing at least one paper cover sheet having a bond liner and applying a coating of an adhesive which is a latex or aqueous suspension of a synthetic polymer by calender-

ing to provide a pattern having said adhesive at limited areas of said bond liner while leaving substantial areas free of said adhesive,

b. casting an aqueous slurry of calcium sulfate hemihydrate on said paper cover sheet over said bond liner with the water from said aqueous slurry establishing wet bonding between said slurry and the uncoated portions of said bond liner, and

c. setting said slurry to form a core and setting said adhesive to establish an adhesive bond between said core and said paper cover sheet at the limited areas containing said adhesive.

4,195,110

GLASS-REINFORCED COMPOSITE GYPSUM BOARD

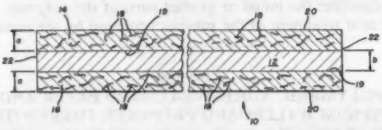
Robert P. Dierks, and Robert J. Rillie, both of Des Plaines, Ill., assignors to United States Gypsum Company, Chicago, Ill.

Continuation of Ser. No. 592,960, Jul. 3, 1975, abandoned, which is a continuation of Ser. No. 415,038, Nov. 12, 1973, abandoned.

This application Mar. 15, 1976, Ser. No. 666,539

Int. Cl.[2] B32B *7/02, 13/02, 13/14*

U.S. Cl. 428—218 **18 Claims**



1. A reinforced gypsum board having two opposite exposed gypsum face surfaces terminating in edge surfaces, the board consisting essentially of

rehydrated stucco and randomly disposed glass fibers and being free of organic fibers,

the fibers being selectively dispersed within the stucco so as to define, under said face surfaces, reinforced stucco portions in which said fibers are uniformly concentrated, and a core stucco portion disposed between said reinforced portions which is essentially free of said fibers,

said reinforced portions having a density of stucco which is substantially greater than that of the stucco of said core portion,

whereby said board has enhanced flexural strength.

4,195,111

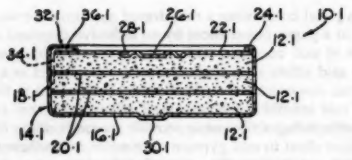
LOAD SUPPORTING MEANS AND THE FORMATION THEREOF

Jacobus J. Rautenbach, Muldersdrift, South Africa, assignor to Fowler Holdings Limited, Pretoria, South Africa

Filed Oct. 25, 1977, Ser. No. 845,422

Int. Cl.[2] B32B *7/02;* **E02D** *27/00;* **E04B** *2/00*

U.S. Cl. 428—218 **34 Claims**



1. A displaceable load supporting cell for supporting a load pressure of at least about 8,000 kPa with a compression of less than about 20%, and comprising at least one compacted layer of particulate material compacted under a pressure of at least about 12,000 kPa and having a height which is less than about one third of its minimum lateral dimension, retaining means for retaining the particulate material particles against dislodgement from the layer, and restraining means comprising at least one radially expansible restraining panel which is associated with the layer to extend transversely to the height of the layer, the restraining panel having a sufficient tensile strength to resist fracture during radial expansion under applied load pressures for which the cell is designed, the particulate material particles being such that while they are capable of being displaced relatively to each other under an applied load during compression of the cell, they co-operate frictionally with each other and with the restraining panel to restrain lateral displacement of the particles in the layer under an applied load.

26. A method of forming a load supporting cell for supporting a load pressure of at least about 8,000 kPa with a compression of less than about 20%, which includes the steps of filling a pan having a height less than about one third of its minimum lateral dimension and comprising a base panel and a retaining sleeve extending upwardly from the periphery of the base panel, with particulate material, positioning the pan in a die shaped to restrain lateral expansion of the pan, and applying a pressure of at least about 12,000 kPa to the particulate material to compact it into a layer in the pan, the base panel being radially expansible and having a sufficient tensile strength to resist fracture during radial expansion under applied load pressures for which the cell is designed, and the particulate material particles being such that while they are capable of being displaced relatively to each other under an applied load during compression of the cell, they co-operate frictionally with each other and with the base panel to restrain lateral displacement of the particles in the layer under an applied load.

4,195,112

PROCESS FOR MOLDING A NON-WOVEN FABRIC

Dennis R. Sheard, and Roger W. Taylor, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, United Kingdom

Filed Feb. 22, 1978, Ser. No. 880,304

Claims priority, application United Kingdom, Mar. 3, 1977, 9016/77

Int. Cl.[2] B27J *5/00;* **D04H** *1/58*

U.S. Cl. 428—288 **8 Claims**

1. A process for molding a shaped article from an initial coherent, pliable, non-woven fabric comprising at least 20% of potentially adhesive fibers which have been formed from at least two fiber-forming polymeric components selected from the group consisting of polyolefines, polyamides, and polyesters, the components extending along the length of the fiber and one of the components having a lower softening temperature than the other components and forming at least part of the peripheral surface of the fiber, the fabric having discrete areas (A) in which fibers have been thermally bonded one to another, and discrete areas (B) in which thermally bonded fibers are absent, the molding process comprising the steps of

(a) shaping the fabric by pressing it against the surface of a mold,

(b) heating the shaped fabric while retained on the mold to a temperature at least equal to the softening temperature of the lower softening component but below the softening temperature of the other components of the potentially adhesive fibers to cause bonding of the potentially adhesive fibers in the discrete areas (B),

(c) cooling the fabric, wherein the time and temperature of the heating of step (b) produce a level of fiber bonding sufficient to cause the cooled fabric to retain its molded shape and

(d) removing the resulting shaped article from the mold.

4,195,113
ENCAPSULATED IMPREGNATED ROVINGS

Richard L. Brook, Mt. Prospect, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

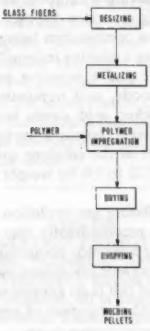
Division of Ser. No. 557,656, Mar. 12, 1975. This application Sep. 14, 1978, Ser. No. 942,450
Int. Cl.[2] D02G 3/00
U.S. Cl. 428—375 12 Claims

1. A solid impregnated roving comprising a fibrous roving impregnated with a thermosetting resin in admixture with a thermoplastic resin, said admixture being in semi solid form, said impregnated roving being encapsulated within a thin membrane of thermoplastic encapsulating resin.

4,195,114
CONDUCTIVE PLASTIC AND METHOD OF PREPARATION

Edward G. Crosby, Marlboro, N.Y.; James E. Henning, Pampano Beach, Fla., and Frederick C. Hornbeck, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 754,939, Dec. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 609,658, Sep. 2, 1975, abandoned. This application Sep. 12, 1978, Ser. No. 941,701
Int. Cl.[2] B32B 15/00, 17/00; D02G 3/00
U.S. Cl. 428—404 5 Claims



1. A plastic molding pellet comprising,

a core, in the form of at least one roving of metalized glass fibers, and

a surrounding body of a thermoplastic enclosing the glass fibers individually,

said body and said core being substantially equal in length and of a length to produce fibers averaging at least three-sixteenths of an inch in length in an article molded from the pellets,

said core having a sufficient number of metalized glass fibers to give a subsequently molded article a useful value of electrical conductivity, and said body having a width sufficient to produce a weight percent of metalized glass fibers in the pellet in the range of 10 to 50 percent,

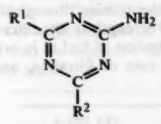
wherein said core of glass fibers comprises about 750 glass fibers.

4,195,115
COATING COMPOSITIONS

Brian Y. Downing, Kingswinford, and George D. Hamer, Birmingham, both of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Nov. 14, 1977, Ser. No. 851,375
Claims priority, application United Kingdom, Nov. 27, 1976, 49567/76; May 11, 1977, 19695/77
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.[2] C08J 9/00, 9/10
U.S. Cl. 428—482 13 Claims

1. An intumescent composition comprising a mineral acid catalyst, a source of carbon, a blowing agent and a solution, in an unsaturated monomer, of a plasticized unsaturated polyester having carbon-carbon unsaturation along its backbone chain, the unsaturated polyester being plasticized by means of 1 to 75 percent by weight (based on the weight of unsaturated polyester) of a plasticizer selected from the group consisting of alkyl phosphates, halogenated alkyl phosphates, halogenated paraffins and ester type plasticizers, the blowing agent comprising a salt of a polybasic carboxylic acid, containing not more than 2 non-carboxyl carbon atoms per carboxyl group, and a 2-amino s-triazine of general formula



wherein R^1 and R^2 may be the same or different and are selected from H, halogen, hydroxyl and amino groups and alkyl, substituted alkyl, alkenyl and substituted alkenyl groups containing not more than 6 carbon atoms.

4,195,116
HIGH SOLIDS THERMOSETTABLE COATING COMPOSITIONS CONTAINING 1,4-DIMETHYLOLCYCLOHEXANE

George J. Anderson; J. Owen Santer, both of East Longmeadow, and Timothy F. Desmond, Winchester, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed May 15, 1978, Ser. No. 905,710
Int. Cl.[2] C08L 61/24
U.S. Cl. 428—524 9 Claims

1. A liquid composition comprising 1,4-dimethylolcyclohexane, and an alkylated urea-formaldehyde condensate of average degree of condensation of about 3 or less, alkylated with a C_1 to C_4 alcohol, wherein the molar ratio of urea: formaldehyde:alcohol of the alkylated urea-formaldehyde condensate is in the range of about 1:2–3:1–2.5 and wherein the ratio of hydroxyl groups of the 1,4-dimethylolcyclohexane to alkoxymethyl groups of the alkylated urea-formaldehyde condensate is in the range of about 1:0.7 to about 1:2.5.

4,195,117
PROCESS FOR ELECTROPLATING DIRECTLY PLATEABLE PLASTIC WITH NICKEL-IRON ALLOY STRIKE AND ARTICLE THEREOF

Daniel Luch, Warwick, N.Y., assignor to The International Nickel Company, Inc., Suffern, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,074
Int. Cl.[2] B23P 3/20; C25D 5/10, 5/12, 5/14
U.S. Cl. 428—626 5 Claims

1. In an electroplated chromium-topped, directly plateable plastic object, suitable for a service condition at least as severe as service condition 3 or for a service condition requiring long term heat resistance, having a corrosion-resistant electrodeposited nickel layer underlying said chromium, the improvement comprising providing a nickel-iron alloy containing about 5%

to about 50% iron, up to 20% cobalt balance essentially nickel, as a strike electrodeposited layer immediately adherent to said directly plateable plastic.

4. In the process of electroplating directly plateable plastic to provide a plated object suitable for service conditions at least as severe as service condition SC3 or for a service condition requiring long term heat resistance, the improvement comprising employing as a strike deposit a nickel-iron alloy containing about 5% to about 50% iron, up to 20% cobalt, balance essentially nickel.

4,195,118

CONSTANT STRENGTH FUEL-FUEL CELL

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Apr. 19, 1979, Ser. No. 31,622
Int. Cl.[2] H01M *8/04*
U.S. Cl. 429—15 **1 Claim**

1. An improvement in the method of supplying "hydrogen" containing hydrocarbon fuels miscible with water to fuel cells, in a manner which provides a constant strength fuel to the cell comprising the steps of:

recirculating through the section of the fuel cell containing the liquid fuel,

the reject liquid materials from special type membrane filters, which retain or refuse to pass the basic fuel material,

disposing of the water passing through the filter,

controlling the fuel strength in the filter reject to produce the same concentration of fuel as in original feed stock,

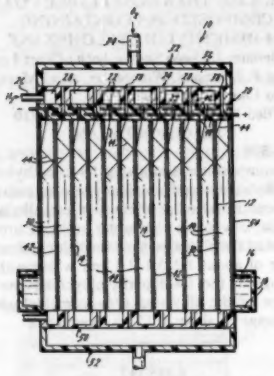
by controlling the rate of filtration, and the quantity of recirculated fuel.

4,195,119

FUEL CELL

Joseph T. Kummer, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 21, 1978, Ser. No. 962,735
Int. Cl.[2] H01M *8/08*
U.S. Cl. 429—38 **3 Claims**



1. A hydrogen/oxygen fuel cell comprising:

a honeycomb separator having a plurality of walls which form cells thereby to define a plurality of separate hydrogen compartments and oxygen compartments, said walls of said honeycomb separator being formed of a material having a porosity which allows a capillary transport therethrough of an electrolyte;

an electrolyte reservoir in contact with at least a portion of said honeycomb separator;

a hydrogen/oxygen fuel cell electrolyte in said reservoir, said hydrogen/oxygen fuel cell electrolyte being wicked into said walls of said honeycomb separator;

hydrogen supply means for supplying hydrogen to every other cell in a checkerboard fashion thereby to define hydrogen compartments in said honeycomb separator;

oxygen supply means for supplying oxygen to every cell not a hydrogen compartment thereby to define oxygen compartments in said honeycomb separator, said hydrogen compartments and said oxygen compartments being generally in a side-by-side relationship throughout said honeycomb separator;

electrode catalyst material deposited on said walls of said honeycomb separator defining said hydrogen compartments and said oxygen compartments;

current carrying means in each of said hydrogen compartments and said oxygen compartments for providing an electrical circuit to said electrode catalyst material in each of said compartments;

a first current collecting terminal means connected to each of said current carrying means located in said hydrogen compartments of said honeycomb separator to provide a first pole for said fuel cell;

a second current collecting terminal means connected to each of said current carrying means located in said oxygen compartments of said honeycomb separator to provide a second pole for said fuel cell; and

exhaust means for removing oxidation products and excess hydrogen and oxygen respectively from said hydrogen compartments and said oxygen compartments.

4,195,120

HYDROGEN EVOLUTION INHIBITORS FOR CELLS HAVING ZINC ANODES

Eleanor J. Rossler, Lorne Park, and Franciszek J. Przybyla, Mississauga, both of Canada, assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Nov. 3, 1978, Ser. No. 957,387
Int. Cl.[2] H01M *10/44*
U.S. Cl. 429—50 **10 Claims**

1. An alkaline cell having a cathode, an anode and at least one electrolyte carrying separator disposed between said cathode and said anode, the combination being retained in a conductive container having a positive terminal electrically associated with said cathode and a negative terminal electrically associated with said anode, said terminals being electrically insulated from each other, said anode being predominantly zinc; and said cell having therein a surfactant which is an organic phosphate ester of the ethylene oxide-adduct type in an amount of from 0.001% to 5% by weight of the zinc component of said cell.

5. A process for inhibiting gas evolution in an alkaline cell which has a cathode, a predominantly zinc anode and at least one electrolyte carrying separator comprising incorporating a surfactant which is an organic phosphate ester of the ethylene oxide-adduct type in said cell in an amount of about 0.001% to 5% by weight of the zinc component of said cell.

4,195,121

THIN FLEXIBLE ELECTRODES AND THE METHOD FOR PRODUCING THEM

Gordon E. Peterson, Cleveland, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 28, 1978, Ser. No. 890,974
Int. Cl.[2] H01M *4/54*; C04B *35/00*
U.S. Cl. 429—127 **5 Claims**

1. A method for producing a thin, flexible electrode comprising the steps:

(a) blending together an active material powder with a minor amount of an ethylene acrylic acid polymer powder to form a dry electrode mix; and

(b) compressing the dry electrode mix with a pressure between about 500 and about 10,000 pounds per square inch and heating it to a temperature of between about 60° C. and about 93° C. to form a thin, flexible electrode stock.

4,195,122

ADDITIVE FOR HIGH DRAIN RATE LITHIUM CELLS

Nehemiah Margalit, Levittown, and Philip E. Krouse, Yardley, both of Pa., assignors to ESB Technology Company, Yardley, Pa.

Filed Sep. 25, 1978, Ser. No. 945,426
Int. Cl.[2] H01M 6/14
U.S. Cl. 429—194 8 Claims

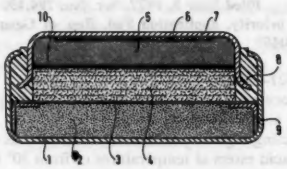
1. An improvement in an electrochemical cell having a lithium anode, a non-aqueous electrolyte comprised of a solvent and solute, other than alkali metal hexafluoro phasphate and a cathode, the improvement comprises having as an additive a minor portion of alkali metal hexafluorophosphate salt; wherein the amount of hexafluorophosphate salt ranges from 0.05 to 0.1 molar.

4,195,123

NON-AQUEOUS ELECTROLYTE LITHIUM BATTERY WITH IMPROVED STORAGE LIFE

Yves Jumel, Poitiers, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Jan. 9, 1979, Ser. No. 2,090
Claims priority, application France, Jan. 10, 1978, 78 00507
Int. Cl.[2] H01M 6/14
U.S. Cl. 429—194 5 Claims



1. An electrochemical cell including a lithium negative electrode; a non-aqueous electrolyte which comprises a solute and at least one organic solvent; and a positive electrode spaced from the negative electrode, the positive electrode having a positive active material which is slightly soluble in said solvent; wherein the improvement comprises:

only the surface of the negative electrode being alloyed with at least one metal selected from the group formed by lead, tin, antimony and silver.

4,195,124

SOLAR RADIATION ENERGY ABSORBER

Hiroshi Doi, Katano; Shiyuichiro Ochiai, Ohmihachiman; Shigeyuki Kawai, Takarazuka; Kazuaki Miyamoto, and Tadashi Sasaki, both of Mishima, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Apr. 21, 1977, Ser. No. 789,718
Claims priority, application Japan, Apr. 26, 1976, 51/48143
Int. Cl.[2] B32B 15/04
U.S. Cl. 428—469 6 Claims

1. A selective solar energy absorber consisting of a metallic copper or copper alloy substrate and a permanent black to dark brown copper oxide coating having a thickness of 0.2 to 0.6 microns on its surface, said coating having been produced by dipping the substrate in an aqueous alkaline solution consisting essentially of 3 to 10% by weight, based on the weight of water, of an alkali metal hydroxide or an alkali metal carbonate and 0.5 to 10% by weight, based on the weight of the aqueous alkaline solution of at least one member selected from the group consisting of peroxodisulfuric acid, alkali metal peroxodisulfate and ammonium peroxodisulfate, at a temperature of from 40° C. to 80° C. for a period of from 1 minute to 20 minutes.

4,195,125

PROCESS FOR OBTAINING INSULIN-PRODUCING ANIMAL CELLS

Adolf Wacker, Neu-Isenburg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,526
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757169
Int. Cl.[2] A01N 1/02
U.S. Cl. 435—2 3 Claims

1. A process for obtaining insulin-producing cells which comprises fusing islet cells derived from pancreas with A9 cells or human He-La-cells growing in suspension.

4,195,126

ALBUMIN-DYE COMPLEX FOR FATTY ACID DETERMINATION

Leo M. Hall, Homewood, Ala., assignor to The Board of Trustees of the University of Alabama, Birmingham, Ala.

Filed Oct. 4, 1977, Ser. No. 839,361
Int. Cl.[2] G01N 31/14, 33/16; C07G 7/00
U.S. Cl. 435—11 36 Claims

1. An albumin-dye complex comprising a serum or plasma albumin which contains less than 2 moles of endogenous fatty acids per mole of said serum or plasma albumin and which has been complexed with from 0.5 to 4.0 moles of a fatty acid and from 0.1 to 5.0 moles of a dye per mole of said serum or plasma albumin which dye may be displaced from said dye-albumin complex by free fatty acids.

4,195,127

PROCESS FOR IMMOBILIZING PROTEINS

Frank J. Hartdegen, Columbia, and Wayne E. Swann, Pasadena, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 743,035, Nov. 18, 1976, Pat. No. 4,098,645, which is a continuation-in-part of Ser. No. 660,982, Feb. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 585,674, Jun. 10, 1975, abandoned. This application Nov. 16, 1977, Ser. No. 851,932
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.[2] C07G 7/00, 7/02
U.S. Cl. 435—174 11 Claims

1. A solution prepared by admixing, in the absence of water, an isocyanate-capped liquid polyurethane prepolymer and a protein, wherein said prepolymer is the reaction product of a polyether polyol with sufficient polyisocyanate to provide at least two free NCO groups per molecule of the prepolymer.

4,195,128

POLYMERIC CARRIER BOUND LIGANDS

Dietrich Hildebrand, Odenthal, Fed. Rep. of Germany, and Thomas Gribnau, Weezenhof, Netherlands, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 792,297, Apr. 29, 1977, Pat. No. 4,144,128. This application Oct. 2, 1978, Ser. No. 948,186
Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619451
Int. Cl.[2] C07G 7/02
U.S. Cl. 435—178 6 Claims

1. A carrier bound ligand of the formula:

T—X—P—X—L

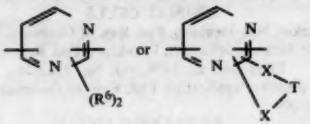
wherein

T represents the residue of a polymeric carrier;

X is independently a divalent oxygen or sulfur atom, —NH—, —NHR[5]—, —CONH— or —CONR[5]—, wherein R[5] is lower alkyl;

L is the residue of a ligand; and

P is



wherein each R^6 is hydrogen, hydroxyl, lower alkyl, lower alkoxy, loweralkylthio, loweracylamino, nitro, cyano, carboxamide, loweralkylsulphonyl, loweralkoxycarbonyl, phenyl, trifluoromethyl, chloromethyl or T—X—.

4,195,129

METHOD FOR IMMOBILIZING ENZYMES AND MICROBIAL CELLS

Saburo Fukui, Nagaokakyo; Tsutomu Yamamoto, and Takamitsu Iida, both of Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Japan

Continuation-in-part of Ser. No. 700,562, Jun. 28, 1976, abandoned, and Ser. No. 700,577, Jun. 28, 1976, abandoned. This application Dec. 29, 1977, Ser. No. 865,433

Claims priority, application Japan, Nov. 26, 1975, 50-140839; Nov. 26, 1975, 50-140840

Int. Cl.² C07G *7/02*

U.S. Cl. 435—182 **10 Claims**

1. A method for immobilizing enzymes or microbial cells which is characterized in the steps of:

uniformly mixing aqueous dispersion of enzymes or microbial cells with a monomer-free photo-curable resin having a number average molecular weight of 800 to 100,000, two or more photo-polymerizable ethylenically unsaturated groups per molecule and nonionic hydrophilic groups; and

irradiating actinic rays having a wave length of 2500 to 6000 Å to said mixture, whereby said enzymes or microbial cells are entrapped in said resin.

4,195,130

PROPAGATION OF FELINE INFECTIOUS PERITONITIS VIRUS IN TISSUE CULTURES

Yasutaka Hoshino, and Fredric W. Scott, Brooktondale, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Apr. 20, 1978, Ser. No. 898,057

Int. Cl.² C12N *7/00*

U.S. Cl. 435—235 **10 Claims**

1. A method of propagating feline infectious peritonitis virus which comprises culturing the virus in a feline infectious peritonitis virus growth supporting feline tissue culture at a feline infectious peritonitis virus propagation promoting temperature below normal feline body temperature.

4,195,131

ENVIRONMENTALLY CONTROLLED UNIT

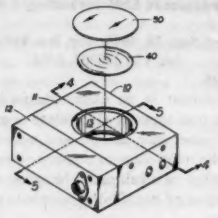
Gary R. Papas, 53 E. Rogues Rd., Huntington, N.Y. 11743

Continuation of Ser. No. 775,971, Mar. 9, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,864

Int. Cl.² C12B *1/00*

U.S. Cl. 435—291 **6 Claims**

1. An environmentally controlled unit comprising a block of heat conductive material with at least two parallel planar faces and a specimen chamber having two open ends interconnecting said faces, a circuitous passage penetrating said block surrounding said chamber and adapted to receive and exhaust temperature controlled fluid, a first passage penetrating said block to said chamber to supply fluid thereto, a second passage penetrating said block to said chamber to extract fluid therefrom, access to said passages from the outside of said block being provided on wall portions between said faces, a shoulder at one of said ends of said chamber, cover means mounted on said shoulder for sealing said one end, a specimen supporting



element, and means for mounting said specimen supporting element to seal the other end of said chamber.

4,195,132

CROSS-LINKED PLASTICS BASED ON CYANIC ACID ESTERS AND METHOD OF PRODUCTION THEREOF

Rudolf Sundermann, New Martinsville, Pa.; Günther Rottloff, Cologne, and Ernst Grigat, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 5, 1977, Ser. No. 794,196

Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620487

Int. Cl.² C08G *73/06*

U.S. Cl. 521—155 **17 Claims**

1. A process for the production of crosslinked plastics based on cyanic acid esters comprising:

(A) reacting organic polyhydroxyl compounds with polycyanic acid esters at temperatures of from 30° to 150° C. to form partially crosslinked organic solvent-soluble prepolymers, and

(B) hardening said prepolymer by heating it to from 100° to 350° C.

4,195,133

CDB RUBBER MODIFIED THERMOPLASTICS

Raymond F. Murphy, Whippany, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 668,083, Mar. 18, 1976, Pat. No. 4,143,098. This application Nov. 28, 1978, Ser. No. 964,334

Int. Cl.² C08L *51/04*

U.S. Cl. 525—71 **11 Claims**

1. An impact resistant elastomer grafted styrene or styrene-acrylonitrile polymeric thermoplastic composition, the elastomer being a blend of (a) a conjugated diene butyl copolymer consisting of 85 to 99.5% by weight of a C_4–C_7 isoolefin and 15 to 0.5% by weight of a conjugated C_4–C_{14} diolefin, said copolymer having randomly distributed sites of conjugated diene unsaturation with (b) from 10 to 90% by weight of a chlorinated butyl rubber.

4,195,134

POLYESTER RESIN WITH IMPROVED RETENTION OF PROPERTIES

Ernest A. Coleman, Kinnelon, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,870

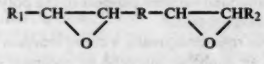
Int. Cl.² C08L *63/00*

U.S. Cl. 525—65 **13 Claims**

1. Polyester composition comprising a blend of:

(a) at least about 40 weight percent poly (C_2–C_4 alkylene terephthalate);

(b) between about 0.1 and about 15 weight % based on poly (C_2–C_4 alkylene terephthalate) of a diepoxy compound represented by the general formula:



wherein R_1 and R_2 represent hydrogen, alkyl, cycloalkyl, aryl, or aralkyl, and R_1 and R_2 may be bonded to each other, and R represents alkylene, cycloalkylene, arylene, alkarylene or aralkylene, each of which may optionally have an ether group and/or an ester group, and R may be optionally bonded to R_1 and/or R_2; and

(c) between about 5 and about 20 weight % based on poly (C_2–C_4 alkylene terephthalate) of a multiphase composite polymer comprising:

(1) about 25 to about 95 weight percent of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C_1 to C_6 alkyl acrylate, 0.1 to 5% by weight crosslinking monomer, and 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethyleneically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and

(2) about 75 to 5 weight percent of a final, rigid thermoplastic phase polymerized in the presence of said elastomeric phase.

4,195,135

THERMOPLASTIC NITRILE RESIN BLENDS

George S. Li, Aurora, and John F. Jones, Cuyahoga Falls, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 846,289, Oct. 28, 1977, Pat. No. 4,153,648. This application Nov. 22, 1978, Ser. No. 926,813

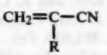
Int. Cl.² C08L *53/02, 55/02*

U.S. Cl. 525—69 **10 Claims**

1. The blend composed of 100 parts by weight of

(I) a polymer prepared by the polymerization of 100 parts by weight of

(A) from 50 to 90% by weight of at least one nitrile having the structure

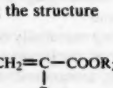


wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) from 10 to 50% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) styrene,

(2) an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(3) an alpha-olefin having the structure

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

(4) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, and

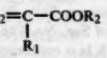
(5) vinyl acetate,

in the presence of from 1 to 40 parts by weight of

(C) a rubbery polymer selected from the group consisting of

(1) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and and isoprene and optionally at least one comonomer selected from the group consisting of styrene, a nitrile monomer having the structure

wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer,

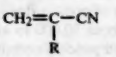
(2) an ethylene-propylene rubber, and

(3) a chlorobutyl rubber, and

from 5 to 15 parts by weight of

(II) a polymer resulting from the copolymerization of

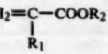
(A) from 50 to 90% by weight of at least one nitrile having the structure



wherein R has the foregoing designation,

(B) from 10 to 50% by weight of indene, and

(C) from 0 to 40% by weight of an ester having the structure



wherein R_1 and R_2 have the foregoing designations.

4,195,136

IMPACT-RESISTANT STYRENE RESIN COMPOSITION

Yasushi Sato, Yokohama; Toshio Ibaragi, Kawasaki; Masanobu Ishihara, Yokosuka, and Makoto Honda, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1978, Ser. No. 945,320

Int. Cl.² C08L *51/04, 53/02*

U.S. Cl. 525—71 **12 Claims**

1. A resin composition comprising (A) 75–98 parts by weight of a block copolymer mixture of a vinyl aromatic hydrocarbon and a conjugated diene and (B) 25 - 2 parts by weight of an

impact-resistant styrene resin, wherein said copolymer mixture (A) is a mixture of:

(1) a copolymer consisting of at least one vinyl aromatic hydrocarbon polymer block and at least one conjugated diene polymer block, and having a vinyl aromatic hydrocarbon content of 55–85% by weight and a number average molecular weight of about 10,000 to about 500,000, and

(2) a homopolymer of vinyl aromatic hydrocarbon or a copolymer consisting of at least one vinyl aromatic hydrocarbon polymer block and at least one conjugated diene polymer block, and having a vinyl aromatic hydrocarbon content of 75% by weight or more which is at least 5% by weight higher than that of the copolymer (1), said copolymer and said homopolymer both having a number average molecular weight of about 500 to about 130,000,

the weight ratio of said copolymer (1) to said homopolymer or copolymer (2) in said mixture being 1.5/1 or more, said copolymer (1) and said copolymer (2) being both obtained by polymerization with an organolithium compound as a catalyst in an inert organic solvent, and wherein said impact-resistant styrene resin (B) is a graftcopolymer of 97 to 88% by weight of a vinyl aromatic hydrocarbon on 3–12% by weight of a rubbery conjugated diene polymer.

4,195,137

METHOD OF PREPARING VINYL HALIDE POLYMERS AND COPOLYMERS WITH POLYOLEFINS

Leigh E. Walker, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 746,048, Nov. 30, 1976, Pat. No. 4,067,928, which is a continuation-in-part of Ser. No. 541,163, Jan. 15, 1975, Pat. No. 4,007,235. This application Dec. 30, 1977, Ser. No. 866,137

The portion of the term of this patent subsequent to Feb. 8, 1994, has been disclaimed.

Int. Cl.[2] **C08F** *255/02*

U.S. Cl. 525—317 **5 Claims**

1. A high impact strength vinyl halide polymer of improved small particle size prepared by the improved process which comprises polymerizing in bulk a vinyl halide monomer, in the liquid phase, either alone or in combination with up to about 50% by weight of another ethylenically unsaturated monomer copolymerizable therewith, in the initial presence of more than about 1.8% by weight based on said vinyl halide monomer of a polyolefin or mixture of polyolefins having a weight average molecular weight of about 50,000 to about 1,000,000, wherein the improvement in said process comprises removing from the polymerization mass during the thick paste state thereof from about 2% to less than about 50% by weight of the vinyl halide charged to the polymerization mass, the effective concentration of said polyolefin or mixture of polyolefins after said vinyl halide removal being above about 3.5 weight percent based on vinyl halide remaining in said polymerization mass after said removal of vinyl halide whereby a more finely divided particulate product of high impact strength is obtained.

4,195,138

CHELATE RESINS PREPARED FROM THE CURED REACTION PRODUCT OF A POLYALKYLENEPOLYAMINE AND EPOXIDE

Eldon L. Ward, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 26, 1978, Ser. No. 918,874

Int. Cl.[2] **C08G** *59/16, 73/02;* **C08J** *7/14*

U.S. Cl. 525—404 **14 Claims**

1. A method for preparing chelate resins comprising the step of contacting a cured reaction product of a polyamine of an aliphatic, alicyclic or aromatic hydrocarbon or an inertly substituted aliphatic, alicyclic or aromatic hydrocarbon and a polyfunctional epoxide with an effective amount of an alkali metal acid-salt of an α,β-ethylenically unsaturated carboxylic acid and alkali metal acid salt of a halogenated carboxylic acid at conditions such that the carboxyl groups of the carboxyl containing compound become pendent to the polymer chain of the cured reaction product.

11. A chelate resin comprising a cured reaction product of a polyamine of an aliphatic, alicyclic or aromatic hydrocarbon or an inertly substituted aliphatic, alicyclic or aromatic hydrocarbon and an epoxide having incorporated therein a polyfunctional effective amount of a polymerizate of an alkali metal acid-salt of an α,β-ethylenically unsaturated carboxylic acid.

4,195,139

FIRE RETARDANT COMPOSITION COMPRISING A MELAMINE-ALDEHYDE-PHOSPHATE CONDENSATE

Terence Goulding, and Michael L. Orton, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 30, 1978, Ser. No. 911,194

Claims priority, application United Kingdom, Jun. 8, 1977, 23912/77

Int. Cl.[2] **C08L** *61/28, 61/32*

U.S. Cl. 525—441 **17 Claims**

1. A melamine-aldehyde-phosphate condensation product produced by reacting melamine and at least one aldehyde, or by reacting condensate of melamine and at least one aldehyde, with at least one oxyacid of phosphorus or precursor therefor or ester thereof until the condensation product is essentially non-acidic, the proportions of melamine and aldehyde being chosen such that the molar ratio of units derived from melamine:units derived from aldehyde in the condensation product is in the range 1:1.5 to 1:4.5, and the proportions of melamine and oxyacid of phosphorus or precursor therefor or ester thereof being chosen such that the molar ratio of units derived from melamine:phosphorus in the condensation product is in the range 1:0.4 to 1:1.7.

4,195,140

ADHESIVE-PROMOTING COMPOSITIONS

Frederick H. Sexsmith, Erie, and E. Chris Hornaman, Girard, both of Pa., assignors to Lord Corporation, Erie, Pa.

Division of Ser. No. 882,035, Feb. 28, 1978, which is a continuation-in-part of Ser. No. 659,976, Feb. 18, 1976, abandoned. This application Nov. 6, 1978, Ser. No. 958,081

Int. Cl.[2] **C08L** *63/00*

U.S. Cl. 525—523 **5 Claims**

1. A two-package adhesion promoting composition comprising

a first pack consisting essentially of triglycidyl isocyanurate and at least one crosslinking agent comprising at least one methylene donor; and

a second pack consisting essentially of at least one methylene acceptor selected from the group consisting of monomeric polyhydric phenols, monomeric monohydric alkyl phenols and mixtures thereof;

wherein the amount of triglycidyl isocyanurate is in the range from about 0.2 to about 8 parts by weight per part by weight of methylene acceptor and said methylene donor is present in at least a stoichiometric amount, based on methylene acceptor.

4,195,141

AQUEOUS SOLUTION OF MIXTURES OF SILICON-ORGANIC COMPOUNDS

Robert Büning, Troisdorf; Horst Hanisch, Rheidt; Hansjurgen Hass, and Karl-Martin Rödder, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

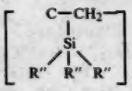
Continuation-in-part of Ser. No. 802,219, May 31, 1977, abandoned. This application Jul. 11, 1977, Ser. No. 814,807

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624888

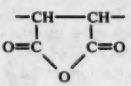
Int. Cl.[2] C08L *43/04*

U.S. Cl. 525—328 8 Claims

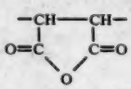
1. A copolymer with recurrent units of the formula



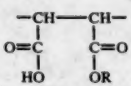
wherein R″ is alkoxy of 1 to 8 carbon atoms and



units, wherein 50 to 100% of the



units are substituted with



wherein R represents a hydrocarbon radical of 1 to 8 carbon atoms.

4,195,142

MODIFIED TERTIARY AMIDE POLYMERS

Kenneth W. Dixon, Sewickley, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,942

Int. Cl.[2] C08F *8/18, 8/20*

U.S. Cl. 525—340 7 Claims

1. A process for the preparation of a polymer or copolymer having tertiary amide chloride units comprising reacting at about 0°–70° C. a polymer or copolymer having tertiary amide groups with an acid chloride selected from the group consisting of thionyl chloride, phosgene, phosphorus trichloride, phosphorus pentachloride and oxalyl chloride, said polymer or copolymer having tertiary amide groups geing devoid of other groups reactive with said acid chloride or capable of hindering the desired reaction between said tertiary amide groups and said acid chloride.

4,195,143

RUBBER ARTICLES HAVING IMPROVED FATIGUE LIFE

John G. Sommer, Jr., Hudson, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 662,311, Mar. 1, 1976, abandoned, which is a continuation of Ser. No. 551,935, Feb. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 375,263, Jun. 29, 1973, Pat. No. 3,913,209, which is a continuation of Ser. No. 137,039, Apr. 23, 1971, abandoned. This application Feb. 27, 1978, Ser. No. 882,014

Int. Cl.[2] C08D *9/00, 13/28;* C08C *17/28*

U.S. Cl. 525—354 1 Claim

1. In an improved resilient bushing having an annular molded vulcanized rubber insert in radially compressed relation between a cylindrical inner member and a cylindrical outer member, said improved bushing having initially low compression set, initially good reversion resistance and substantially improved fatigue life wherein said molded rubber insert comprises is a molded rubber compound vulcanized with from between 0.5 phr and 1.5 phr of sulfur the improvement characterized by the inclusion of from 0.5 phr to 15 phr of post vulcanization added elemental sulfur distributed within the matrix of the vulcanized rubber compound, with no further vulcanization step employed in the manufacture after the addition of the post vulcanization added elemental sulfur.

4,195,144

COPOLYMERS OF ALPHA-N-ALKYLSTYRENES AND STYRENE

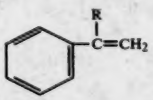
Helen E. Mertwoy, Dresher, and Henry Gisser, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 19, 1978, Ser. No. 952,873

Int. Cl.[2] C08F *212/08*

U.S. Cl. 526—173 9 Claims

1. A solid anionic or radical catalyzed copolymer of styrene and an alpha-n-alkylstyrene represented by the formula:



wherein R is a straight chain alkyl having from 11 to 24 carbon atoms, said copolymer having about 20 to about 40 mole percent of the alpha-n-alkylstyrene.

4,195,145

PROCESS FOR THE PURIFICATION OF HIGHLY CRYSTALLINE POLYOLEFINS

Akinobu Shiga; Kiyoshi Matsuyama; Masahiro Kakugo, and Takatoshi Suzuki, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,806

Claims priority, application Japan, Nov. 11, 1977, 52/136137

Int. Cl.[2] C08F *6/28*

U.S. Cl. 526—137 9 Claims

1. A process for the purification of propylene homopolymers or copolymers which comprises:

(i) polymerizing propylene or copolymerizing propylene with other unsaturated hydrocarbon monomers in liquid propylene in the presence of a catalyst system consisting essentially of (a) an activated titanium trichloride obtained by reducing titanium tetrachloride with an organo-aluminum compound followed by activation and (b) an organo-aluminum compound;

(ii) introducing the resulting polymer slurry into the upper portion of a counter-current washing tower to counter-currently contact the polymer slurry with a C_3–C_8 alcohol and liquid propylene, whereby said catalyst is deactivated

and at the same time the propylene homopolymers or copolymers dissolved in the polymer slurry and the catalyst are removed by washing, wherein said alcohol is used in an amount 0.1 to 50 times by mole based on said organoaluminum compound (b) and is supplied to the washing tower and wherein said liquid propylene is supplied to the lower portion of the washing tower; and

(iii) then after removing volatile monomers by flashing, contacting the powdery propylene homopolymers or copolymers with a gaseous epoxide at a temperature lower than melting point of said homopolymer or copolymer.

4,195,146

ESTERS OF CARBOXY AMINO PHENYL ISOCYANURATES AND VINYLIDENE CARBONYL OXY ALKANOLS

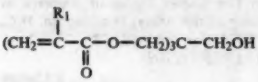
Kenneth H. Markiewitz, and Alfred J. Restaino, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 819,353, Jul. 27, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,265

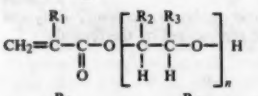
Int. Cl.[2] C08G *18/67*

U.S. Cl. 526—261 **34 Claims**

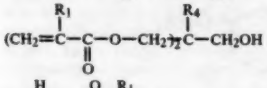
1. A composition of matter comprising isocyanu rates of urethanes of an aromatic polyisocyanate and at least one vinylidene carbonyl oxy alkanol characterized by one of the following formulas:



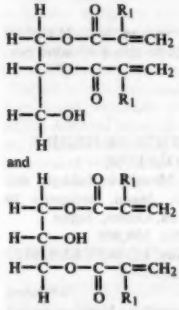
(1)



(2)



(3)



(4)

and

(5)

wherein R_1 is hydrogen or an alkyl group containing from one to four carbon atoms, R_2 is hydrogen, alkyl containing from 1 to 12 carbon atoms, or a chlorinated, brominated, or fluorinated alkyl group containing from 1 to 12 carbon atoms, R_3 is hydrogen, alkyl containing from 1 to 12 carbon atoms, or a chlorinated, brominated, or fluorinated alkyl group containing from 1 to 12 carbon atoms, R_4 is hydrogen, methyl or ethyl, and n is from one to four, with the proviso that R_2 and R_3 on adjacent carbon atoms are not both alkyl or chlorinated, brominated, or fluorinated alkyl.

4,195,147

PREPARATION OF CATIONIC AMINE-FUNCTIONAL COPOLYMERS

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Feb. 22, 1979, Ser. No. 14,101

Int. Cl.[2] C08F *2/06, 220/58*

U.S. Cl. 526—312 **15 Claims**

1. A method of producing water dispersible amine-functional copolymers comprising copolymerizing monoethylenically unsaturated monomers including amine-functional monomer in organic solvent solution in the presence of a solubilizing acid in an amount to neutralize from 25% to 90% of the amine functionality in the copolymer.

4,195,148

POLYURETHANE SPRAY COMPOSITION CONTAINING LACTONE VISCOSITY MODIFIER

Edward L. Hagen, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jul. 12, 1978, Ser. No. 924,105

Int. Cl.[2] C08F *2/44;* C08G *18/10*

U.S. Cl. 528—48 **29 Claims**

1. A method of making a cured polyurethane article by spraying comprising the steps of:

(i) providing a composition which is a mixture of:

(a) a polyurethane prepolymer;

(b) a curative for the polyurethane prepolymer other than 4,4'-methylene bis (o-chloroaniline); and

(c) a lactone having the formula:

wherein R represents an alkylene radical having from 4 to 6 carbon atoms;

(ii) spraying the said mixture onto a surface; and

(iii) thereafter subjecting the sprayed mixture to curing conditions.

4,195,149

HARD, RIGID, NON-ELASTOMERIC POLYURETHANE, COMPOSITIONS

Herbert Stutz, Karlsruhe, and Robert Gehm, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1977, Ser. No. 818,521

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638859

Int. Cl.[2] C08G *18/30*

U.S. Cl. 528—49 **2 Claims**

1. A cured, hard, rigid, non-elastomeric, molded polyurethane composition which is obtained by reacting

A. a liquid, hydroxylic polyether having a functionality of from 2 to 8 and an OH equivalent weight of from 50 to 250, or a mixture of such polyethers,

B. a monofunctional, hydroxylic polyether having a molecular weight of from 150 to 10,000,

C. a polyisocyanate and

D. a catalyst, auxiliaries and additives wherein the ratios of the amounts of A, B and C are so chosen that the ratio of the NCO groups of C to the sum of the OH groups of A and B is from 0.9:1 to 1.2:1 and B is used in amounts of from 5 to 50% by weight, based on the total weight of A, B and C and the average functionality of the total reaction mixture is from 2 to about 3.

4,195,150

NOVEL COMPOSITION FOR PREPARING URETHANE/UREA BLOCK COPOLYMERS

Vincent J. Gajewski, Jackson, N.J., and Elliot Eisenbach, New York, N.Y., assignors to M & T Chemicals Inc., Woodbridge, N.J.

Filed Oct. 13, 1978, Ser. No. 951,176
Int. Cl.[2] C08G *18/16*
U.S. Cl. 528—52 12 Claims

1. A novel composition for preparing elastomeric urethane-urea copolymers, said composition comprising (1) an oligomeric reaction product of a difunctional alkylene polyol with a stoichiometric excess of an aromatic diisocyanate such that the terminal groups of said reaction product are isocyanate groups, (2) a chain extending agent selected from the group consisting of aromatic diamines wherein each amine group is bonded to a carbon atom of an aromatic carbocyclic ring, and (3) a catalytically effective amount of a quaternary ammonium compound of the general formula $R_4N^+OR'^-$ wherein each R is individually selected from the group consisting of hydrogen, alkyl and hydroxyalkyl such that each alkyl or hydroxyalkyl group contains from 1 to 20 carbon atoms, cycloalkyl, aryl, alkaryl and aralkyl, wherein the alkyl portion of said alkaryl or aralkyl groups contain from 1 to 20 carbon atoms and R' is selected from the group consisting of hydrogen, alkyl containing from 1 to 20 carbon atoms and phenyl.

4,195,151

PHENOL-ALDEHYDE-AMINE RESIN/GLYCOL CURATIVE COMPOSITIONS

Raymond A. Dunleavy, Charleston, and Anthony J. Papa, Saint Albans, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 743,613, Nov. 22, 1976, Pat. No. 4,107,106. This application Jun. 1, 1978, Ser. No. 911,523
Int. Cl.[2] C08G *8/20, 8/28, 14/06, 14/12*
U.S. Cl. 528—163 6 Claims

1. A curative mixture comprising: as a first component, the reaction product of reactants from each of the three classes

(I) a phenol which has at least one unsubstituted reactive position on the aromatic nucleus,

(II) a aldehyde, and

(III) an aromatic amine,

which reaction product contains no substantial amount of component from any other class of reactant, and, as a second component,

an organic diol,

said mixture containing from about 20 to about 80 parts by weight of said first component per 100 parts by weight of said first and said second components together.

4,195,152

N-ALKYL POLYAMINES AND CURING OF EPOXY RESINS THEREWITH

Don E. Floyd, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Division of Ser. No. 821,014, Aug. 1, 1977, Pat. No. 4,126,640. This application Jul. 20, 1978, Ser. No. 926,363
Int. Cl.[2] C08L *63/00*
U.S. Cl. 528—87 8 Claims

1. A composition comprising the reaction product of an epoxy resin having terminal epoxide group and an N-alkyl polyamine of the formula

$$R—[NH(CH_2)_x]_y—NHR'$$

where R is an aliphatic hydrocarbon radical having from 5–8 carbon atoms, x is an integer of 2 or 3, y is an integer of 2–4 and R' is H, R or R" where R" is an aliphatic hydrocarbon substituent having 2–14 carbon atoms with the proviso that R" may

(a) contain an oxygen atom in the chain

(b) contain a hydroxyl substituent

(c) contain a phenyl substituent, or

(d) contain any combination of (a), (b) and (c).

4,195,153

NON-CRYSTALLIZING EPOXY RESIN ACCELERATOR

Harold G. Waddill, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Oct. 19, 1978, Ser. No. 952,867
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.[2] C08G *59/56*
U.S. Cl. 528—94 11 Claims

1. As a composition of matter, an accelerator combination that is synergistic for accelerating the curing of a polyglycidyl ether of a polyhydric phenol cured with an amine, said accelerator combination comprising N-aminoethylpiperazine and an alkanolamine.

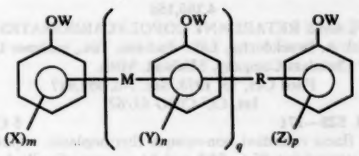
4,195,154

NOVEL 2-AMIDO- OR 2-AMINO-ALKYL ETHERS OF POLYHYDRIC POLYPHENOLS AND PROCESS FOR PREPARING SAME

Mark E. Kaiser, and Harry A. Smith, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

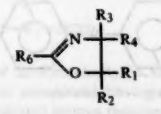
Filed Aug. 15, 1977, Ser. No. 824,768
Int. Cl.[2] C08G *59/50;* C07C *87/28, 103/38*
U.S. Cl. 528—98 13 Claims

1. A process for preparing a compound of the formula

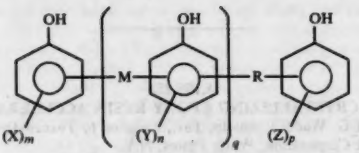


wherein R is a chemical bond, oxygen, sulfur, alkylene or alkylidene; W is hydrogen or a ($—CR_1R_2—CR_3R_4—NHR_5$) group with the proviso that at least two W groups are ($—CR_1R_2—CR_3R_4—NHR_5$) groups; wherein R_1–R_4 are each independently hydrogen, lower alkyl or hydroxy-substituted lower alkyl; R_5 is a

group, wherein R_6 is hydrogen, hydrocarbyl or inertly substituted hydrocarbyl; X, Y and Z are each independently inert substituents; m and p are each independently integers of from zero to four, inclusive; n is an integer of from zero to three, inclusive; q is a number of from zero to about ten; and M is alkylene or alkylidene, comprising reacting by contacting a 2-oxazoline of the formula:



with a polyhydric polyphenol of the formula:



in the presence of a small but catalytic amount of at least tin or one transition metal salt, said transition metal salt catalyst being a salt of a metal in groups 1b, 2b, 6b, 7b and 8 which is included in rows 4 and 5 of the Periodic Table of the Elements, inclusive.

4,195,155

HYDROGENATED POLYNITRILE MIXTURE AND USE AS EPOXY HARDENER

Charles A. Drake, and Ralph P. Williams, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1978, Ser. No. 902,191
Int. Cl.[2] C08G 59/50
U.S. Cl. 528—121 **6 Claims**

1. A process for hardening or curing an epoxy resin which comprises admixing the same in suitable proportions with a product obtained by hydrogenating under hydrogenation conditions the heavy reaction product obtained upon removal of the light fraction from a reaction mass obtained upon reacting olefinically unsaturated nitrile with monoolefinic hydrocarbon containing an allylic hydrogen atom in the presence of a monoadduct reaction product of a monoolefinic hydrocarbon and an olefinically unsaturated nitrile.

4,195,156

FLAME RETARDANT COPOLYCARBONATES

Roderick A. Bruckdorfer, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1978, Ser. No. 951,417
Int. Cl.[2] C08G 63/62
U.S. Cl. 528—171 **5 Claims**

1. A flame retardant non-opaque thermoplastic copolycarbonate comprising 95 to 99.8 weight percent of units derived from an aromatic dihydroxy compound and 0.01 to 5.0 weight percent of units derived from the alkali metal salt of a dihydroxy benzene mono or di sulfonic acid.

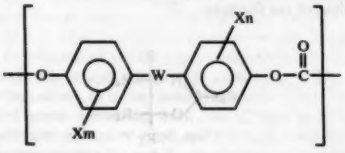
4,195,157

POLYCARBONATE COMPOSITIONS HAVING IMPROVED BARRIER PROPERTIES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 28, 1978, Ser. No. 882,240
Int. Cl.[2] C08G 63/62
U.S. Cl. 528—174 **10 Claims**

1. A flame retardant, high molecular weight aromatic polycarbonate having an I.V. of 0.40–1.0 dl/g and improved water vapor transmission and gas barrier properties, said polycarbonate being represented by the general formula



wherein Xm and Xn can each independently be a halogen, a C_1–C_4 alkyl, and mixtures thereof provided that at least either Xm or Xn is a halogen; m and n are each 0.1–2.5 with the proviso that when either Xm or Xn is a halogen, then m plus n equal at least 0.1, but no more than about 2.5; and, W can be a member selected from the following group:

(a) $-(CH_2)_r-$ wherein R is an integer of 0–10 with the proviso that when Xm and Xn are chlorine and m and n are each 1, r is 0 or 2–10;

(b)

wherein R is a member of the group consisting of C_1–C_{10} alkyl and C_6–C_{14} aryl;

(c)

wherein R and R′ can each independently be the same as R in (b) above;

(d)

wherein p and q can each independently be 0–1; and

(e) —O—.

4,195,158

PROCESS FOR THE PREPARATION OF GRANULAR OXYMETHYLENE POLYMERS HAVING IMPROVED MECHANICAL PROPERTIES

Karlheinz Burg, Wiesbaden; Alwin Heller, Erzhausen; Hans-Dieter Sabel, Schwalbach; Helmut Schlaf, Kelkheim, and Gunter Sextro, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 931,985
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2735946
Int. Cl.[2] C08G 2/28
U.S. Cl. 528—230 **3 Claims**

1. A process for preparing a granular oxymethylene polymer adapted to be molded into articles having good impact strength which comprises preparing a polymer consisting essentially of oxymethylene units and from 0.1 to 20% by weight of oxyalkylene units having from 2 to 8 adjacent carbon atoms in the main chain, introducing said copolymer into a methanol/water solvent mixture having a methanol content of at least 75% by weight to form a solution or dispersion of said polymer at a temperature 5° to 65° C. above the sintering temperature of said polymer, mixing said solution or dispersion with a cooling agent which is a methanol/water solvent mixture having a methanol content of at least 75% by weight at a temperature of 1° to 10° C. below the sintering temperature of said polymer to form a granular polymer precipitate comprising up to 25% by weight of the mixture of solution or dispersion and cooling agent, isolating those particles of the precipitated polymer having a grain diameter of more than 70 microns and drying them.

4,195,159

POLYESTER-AMIDE-IMIDE WIRE COATING POWDER

James R. Kwiecinski, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 726,036, Sep. 23, 1976, Pat. No. 4,117,032. This application Jun. 26, 1978, Ser. No. 919,539

Int. Cl.[2] G08G *63/68*

U.S. Cl. 528—288 9 Claims

1. A solventless, aromatic polyester-amide-imide comprising the reaction product of:

(1) an aromatic diamine;

(2) about 100 to about 110 mole % (of the stoichiometric amount needed to react with said diamine) of a trimellitic compound selected from the group consisting of trimellitic anhydride, trimellitic acid, trimellitic acid halide, and mixtures thereof;

(3) about 35 to about 100 mole % in excess of the stoichiometric amount needed to react with said trimellitic compound of a polyol; and

(4) about 3 to about 25 mole % (based on total moles in total reaction product) of a second aromatic compound selected from the group consisting of monoanhydride, di-acid, tri-acid, di-ester, and mixtures thereof.

4,195,160

EPOXIDE DERIVATIVES OF ESTER DIOL ALKOXYLATES AND COMPOSITIONS THEREOF

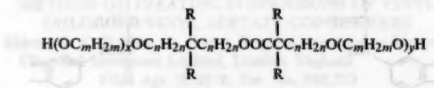
Oliver W. Smith, South Charleston; Joseph V. Koleske, Charleston, and Robert J. Knopf, Saint Albans, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 837,720, Sep. 29, 1977. This application Jan. 4, 1979, Ser. No. 883

Int. Cl.[2] C08G *63/20*

U.S. Cl. 528—297 20 Claims

1. An epoxide modified ester diol alkoxylate comprising the reaction product of (A) an ester diol alkoxylate of the general formula:



wherein m is an integer having a value of from 2 to 4, n is an integer having a value of from 1 to 5, x and y are integers each having a value of from 1 to 20 and R is an alkyl group having from 1 to 8 carbon atoms; and (B) from 0.2 to 1 mole of a diepoxide per mole of (A).

16. An epoxide modified ester diol alkoxylate as claimed in claim 1, said alkoxylate capped with from 0.1 to 1 anhydride equivalent per hydroxyl equivalent initially charged with an intramolecular anhydride of a polycarboxylic acid.

4,195,161

POLYESTER FIBER

Herbert L. Davis, Convent Station; Michael L. Jaffe, North Plainfield, and Michael M. Besso, West Orange, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 400,864, Sep. 26, 1973, abandoned. This application Mar. 22, 1978, Ser. No. 888,961

Int. Cl.[2] C08G *63/70, 63/18*

U.S. Cl. 528—309 25 Claims

1. An improved polyester filament exhibiting no substantial tendency to undergo self-crimping upon the application of heat comprising at least 85 mol percent of polyethylene terephthalate suitable for use in commercial applications having an interconnected highly oriented crystalline microstructure co-extensive with the length of the said filament coexisting with an interdispersed substantially disoriented non-crystalline phase, said filament exhibiting a propensity to undergo a low degree of shrinkage with a high degree of force at an elevated temperature as evidenced by a modulus ratio of at least 0.1.

4,195,162

METHOD FOR PRODUCING POLYLAUROLACTAM POWDER COMPOSITIONS FOR THE COATING OF METALS AT HIGH TEMPERATURES

Rainer Feldmann, Marl; Hans-Joachim Panoch; Heinz Scholten, both of Haltern, and Roland Feinauer, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Division of Ser. No. 722,110, Sep. 10, 1976, Pat. No. 4,143,025. This application Jul. 13, 1978, Ser. No. 924,355

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1975, 2545267

Int. Cl.[2] C08G *69/16*

U.S. Cl. 528—313 7 Claims

1. A method of producing polylaurolactam powders comprising:

(a) polymerizing laurolactam in the presence of about 2 to 10 percent by weight of water, based on said laurolactam, about 0.3 to 0.7 percent by weight of phosphoric acid, based on said laurolactam and at a temperature of about 265° to 300° C. in the absence of chain stabilizers under an internal pressure of about 14 to 25 bars to a polylaurolactam having a relative viscosity of about 1.25 to 1.45 measured in a 0.5 percent meta-cresol solution at 25° C.;

(b) granulating said polylaurolactam of (a);

(c) extracting said granulated polylaurolactam with ethanol or methanol at a temperature of about 25° to 70° C.;

(d) reducing to powdered form said extracted polylaurolactam of (c) at a temperature of about 0° to 45° C. to obtain approximately round powder grains; and

(e) further polymerizing said round powder grains at a temperature between about 140° C. and below the melting point of said polylaurolactam to said polylaurolactam powders having a relative viscosity of about 1.55 to 1.65 measured in a 0.5 percent meta-cresol solution at 25° C.

4,195,163

ACTIVATED ANIONIC POLYMERIZATION OF LACTAMS WITH LIQUID ISOCYANATOALLOPHANATE ACTIVATOR

Rolf-Volker Meyer; Rolf Dhein, and Friedrich Fahnler, all of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

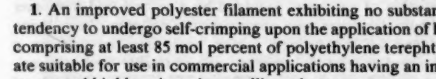
Filed Oct. 16, 1978, Ser. No. 951,712

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746702

Int. Cl.[2] C08G *69/20, 69/18*

U.S. Cl. 528—315 3 Claims

1. A process for preparing a polyamide capable of being shaped into a hollow body comprising polymerizing a lactam with the aid of at least one anionic lactam polymerization catalyst and as activaotor, a liquid isocyanatoallophanate having an isocyanate content of from 10 to 25% by weight and produced by reacting a urethane isocyanate of the formula



with a diisocyanate of the formula $R_1(NCO)_2$ wherein A is the residue of an organic compound having n hydroxy groups which has had its hydroxyl groups removed, n is an integer of from 1 to 4 and R_1 is the residue of an organic diisocyanate which has had its isocyanate groups removed.

4,195,164
TRANSPARENT POLYAMIDES

Rolf-Volker Meyer; Rolf Dhein, and Friedrich Fahnler, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,227

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737257

Int. Cl.² C08G 69/26

U.S. Cl. 528—339 **6 Claims**

1. A transparent thermoplastic copolyamide obtained by polycondensing

(1) 70–100 mol % of a mixture of positional isomeric diaminodicyclohexyl methanes composed of

(a) 75–95 mol % of 4,4'-diamino isomers,

(b) 3–20 mol % of 2,4'diamino isomers and

(c) 0–1 mol % of 2,2'-diamino isomers;

(2) 0–30 mol % of at least one member selected from the group consisting of C_6–C_{12} acyclic aliphatic diamines and C_8–C_{15} cycloaliphatic diamines other than the diaminodicyclohexyl methanes of (1), the molar ratio of all of the cycloaliphatic diamines of (1) and (2) to the acyclic aliphatic diamine of (2) being at least 4:1 and the sum of (a)–(c) and of (1)–(2), respectively, being 100 mol %, and

(3) an equivalent quantity of dicarboxylic acid consisting of

(d) 50–100 mol % of azelaic acid and

(e) 50–0 mol % of at least one member selected from the group consisting of isophthalic acid and adipic acid with the proviso that either the dicarboxylic acid component consists of at least two dicarboxylic acids or the diamine component consists of the isomeric mixture of (1) and at least one diamine of (2), the sum of (d)+(e) being 100 mol %.

4,195,165
ALIPHATIC POLYAMIDE FROM DISUBSTITUTED DECANE DIAMINE

Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

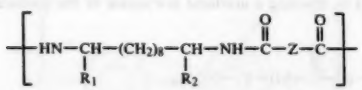
Filed Oct. 26, 1978, Ser. No. 954,807

Claims priority, application Switzerland, Oct. 28, 1977, 13147/77

Int. Cl.² C08G 69/26

U.S. Cl. 528—346 **12 Claims**

1. An aliphatic polyamide which has a reduced specific viscosity of at least 0.3 to about 3.0 dl/g, measured on a 0.5% solution of m-cresol at 25° C., and which consists of identical or different recurring structural elements of the formula I



(I)

in which

R_1 and R_2 independently of one another are straightchain or branched-chain alkyl having 3–20 C atoms, or cycloalkyl having 4–12 C atoms, and

Z is an aliphatic radical having at least 2 C atoms.

4,195,166
ALKANEDIAMIDE-LINKED POLYPHTHALOCYANINES COORDINATED WITH $SnCl_2$

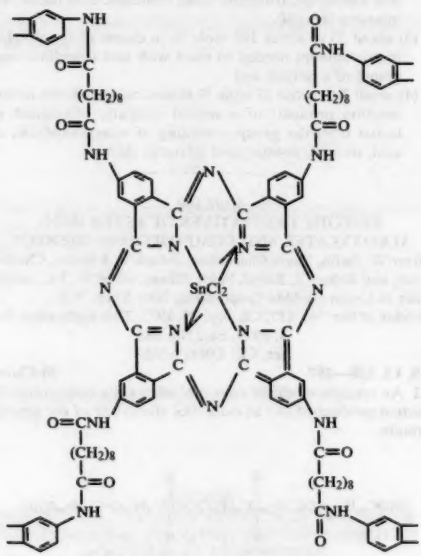
James R. Griffith, Riverdale, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United State of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 954,031

Int. Cl.² C08G 73/06, 79/12

U.S. Cl. 528—270 **1 Claim**

1. A polyphthalocyanine resin having a nucleus represented by the structural formula:



4,195,167
GRADIENT POLYMERS OF TWO OR MORE CYCLIC, ORGANIC, RING-OPENING, ADDITION POLYMERIZABLE MONOMERS AND METHODS FOR MAKING SAME

Robert J. Knopf, and Kenneth L. Hoy, both of Saint Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

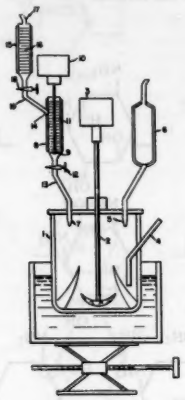
Continuation-in-part of Ser. No. 691,022, May 28, 1976, abandoned. This application Nov. 9, 1978, Ser. No. 959,221

Int. Cl.² C08G 65/08

U.S. Cl. 528—408 **30 Claims**

1. Polymer of a starter and at least two different 1,2-epoxide monomers capable of ring-opening, addition polymerization with themselves and each other, said polymers being characterized by polymer chains attached to said starter and along which the proportion of mer units provided by a first said monomer in a given chain length gradually increases as the proportion of mer units provided by a second said monomer gradually decreases, said characterizing polymer chains being produced by the process which comprises: introducing a starter and at least one primary polymerizable feed composition comprising at least one 1,2-epoxide monomer capable of ring-opening, addition polymerization from at least one primary feed source to a polymerization zone, said primary polymerizable feed composition continually varying in compositional content of the 1,2-epoxide monomers therein during said continuous introduction; simultaneously adding to said pri-

mary feed source at least one different 1,2-epoxide monomer capable of ring-opening, addition polymerization with itself and said first mentioned monomer, from at least one secondary feed source so as to continually change the compositional



content of the polymerizable monomers in said primary polymerizable feed composition in said primary feed source; and continuously polymerizing the primary polymerizable feed composition introduced to the polymerization zone until the desired polymerization has been achieved.

4,195,168

METHOD OF TREATING SUSPENSIONS OF VINYL CHLORIDE/VINYL ACETATE COPOLYMERS

Eldred G. E. Bobbin, St. Neots, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 5, 1978, Ser. No. 893,273

Claims priority, application United Kingdom, Apr. 19, 1977, 16170/77

Int. Cl.[2] C08F *6/10*

U.S. Cl. 528—495 **4 Claims**

1. A method of treating an aqueous suspension of a granular copolymer of vinyl chloride and vinyl acetate which is produced by copolymerizing vinyl chloride and vinyl acetate in an aqueous suspension wherein

the pressure of a vessel containing the aqueous suspension is released by venting and the suspension is then heated at a temperature and pressure sufficient to effect a vaporous outflow, from the suspension, of water vapor, residual vinyl chloride and residual vinyl acetate, after the copolymerization is completed; and

wherein said treating comprises adding to the aqueous suspension, after the end of the copolymerization but before said heating, an amount of at least one steam-volatile phenol selected from 2,6-ditertiarybutyl-4-methyl-phenol; 2,6-ditertiarybutyl-4-methoxy-phenol; and 2,4-dimethyl-6-tertiarybutyl-phenol which amount of phenol is sufficient to satisfy the absorption capacity of the copolymer granules and still provide a sufficient residual quantity thereof for carry-over with the residual vinyl acetate, substantially to prevent any polymerization of the residual vinyl acetate in the outflow as a result of the presence of the phenol with the vinyl acetate, the amount of phenol added being 10 to 1000 ppm based on the total weight of monomers initially charged.

4,195,169

DEVOLATILIZING POLYMERS OF STYRENE AND ACRYLIC OR METHACRYLIC ACID

Duane B. Priddy, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 832,850, Sep. 13, 1977, abandoned. This application Nov. 16, 1978, Ser. No. 961,157

Int. Cl.[2] C08F *6/10, 6/28*

U.S. Cl. 528—500 **8 Claims**

1. A process for the devolatilization of styrene-acrylic acid or styrene-methacrylic acid resins which form gels when subjected to devolatilization at a temperature in excess of about 200° C. and below the decomposition temperature of the polymer, the resin being a polymer of a monomer mixture of from about 1 to 30 parts by weight of acrylic acid or methacrylic acid and 99 to 70 parts by weight of styrene wherein a polymer having polymerized therein styrene and acrylic or methacrylic acid is in intimate admixture with a volatile solvent for the styrene and acrylic acid or methacrylic acid polymer, is subjected to devolatilization the improvement which comprises contacting the styrene-acrylic acid or methacrylic acid polymer containing a volatile solvent to be devolatilized, with from about 0.1 to about 30 parts by weight per 100 parts by weight of the polymer of a monohydric compound of the formula:

ROH

wherein R is hydrogen, alkyl, aryl, aralkyl, alkaryl, alkoxy or polyalkoxy, such groups containing up to 40 carbon atoms and mixtures thereof with the further limitation that the —OH group is primary or secondary.

4,195,170

3',4'-EPISULFIDO KANAMYCIN B COMPOUNDS

Hamao Umezawa; Sumio Umezawa; Shigeo Seki; Shunzo Fukatsu, all of Tokyo, and Shuntaro Yasuda, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

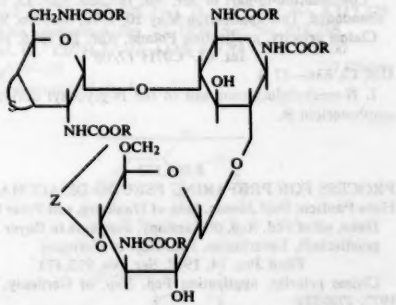
Division of Ser. No. 745,016, Nov. 26, 1976. This application Feb. 23, 1978, Ser. No. 880,401

Claims priority, application Japan, Dec. 9, 1975, 50/145930; Dec. 10, 1975, 50/146345

Int. Cl.[2] C07H *15/22*

U.S. Cl. 536—10 **3 Claims**

1. Penta-amino-protected, 4'',6''-hydroxyl-protected, 3',4'-episulfido derivatives of kanamycin B represented by the formula



wherein R represents lower alkyl and Z represents lower alkylidene, arylidene formed from benzaldehyde, anisaldehyde or tolualdehyde, cyclohexylidene or tetrahydropyranylidene wherein the episulfido group is in the α- or β-position.

4,195,171

DERIVATIVES OF AN ANTIBIOTIC XK-62-2 AND PROCESS FOR THE PRODUCTION THEREOF

Shinji Tomioka, Machida, and Yasuki Mori, Kawasaki, both of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

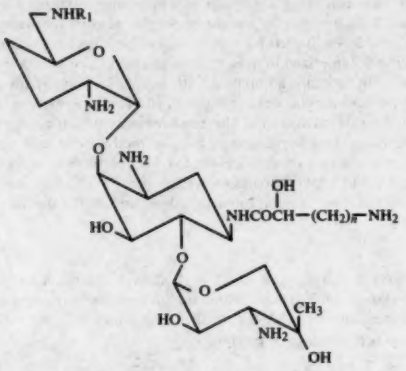
Division of Ser. No. 704,750, Jul. 12, 1976, Pat. No. 4,097,664. This application Apr. 5, 1978, Ser. No. 893,824

Claims priority, application Japan, Jul. 15, 1975, 50-85767; Jul. 15, 1975, 50-85768

Int. Cl.[2] C07H *15/22*

U.S. Cl. 536—17 R **4 Claims**

1. Compounds represented by the formula:



wherein R_1 represents a hydrogen atom or a methyl group, and n is the integer 2, and the pharmaceutically acceptable, non-toxic, acid addition salts thereof.

4,195,172

SALTS OF N-GLYCOSYL DERIVATIVES OF POLYENE MACROLIDES, ESPECIALLY N-METHYLGLUCAMINE SALTS AS WELL AS THE METHOD OF THEIR PREPARATION

Leonard Falkowski, Gdańsk; Zuzanna Kowszyk-Gindifer; Zofia Płóciennik, both of Warsaw; Jan Zielinski, Gdańsk; Halina Dahlig, Warsaw; Jerzy Golik; Ewa Jakobs, both of Sopot; Pawel Kolodziejczyk; Elzbieta Bylec, both of Gdańsk; Danuta Rośłik-Kamińska; Wladyslawa Wagner, both of Warsaw; Jan Pawlak, Sopot, and Edward Borowski, Gdańsk, all of Poland, assignors to Politechnika Gdanska, Gdańsk and Instytut Przemyslu Farmaceutycznego, Warsaw, both of, Poland

Continuation-in-part of Ser. No. 787,265, Apr. 13, 1977, abandoned. This application May 10, 1978, Ser. No. 905,178

Claims priority, application Poland, Apr. 22, 1976, 188979

Int. Cl.[2] C07H *17/08*

U.S. Cl. 536—17 R **3 Claims**

1. N-methylglucamine salt of the N-glycosyl derivative of amphotericin B.

4,195,173

PROCESS FOR PREPARING PSEUDO-DISACCHARIDES

Hans Paulsen; Rolf Jansen, both of Hamburg, and Peter Stadler, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

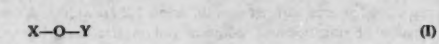
Filed Jun. 14, 1978, Ser. No. 915,473

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1977, 2730372

Int. Cl.[2] C07H *15/22*

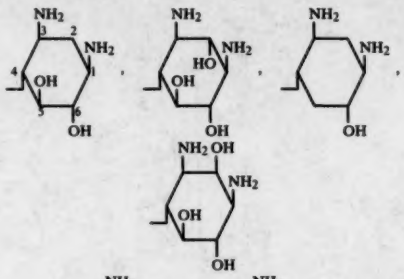
U.S. Cl. 536—17 R **3 Claims**

1. A process for the preparation of a compound, an acid-addition salt or an N-protected derivative thereof, said compound having the formula

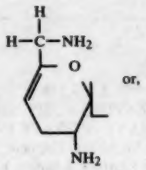


in which

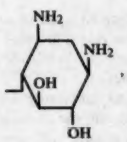
Y is a radical of the formula



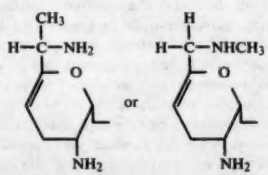
and X is a radical of the formula



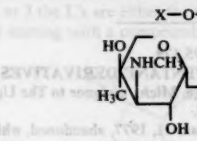
when Y is a radical of the formula



X is a radical of the formula

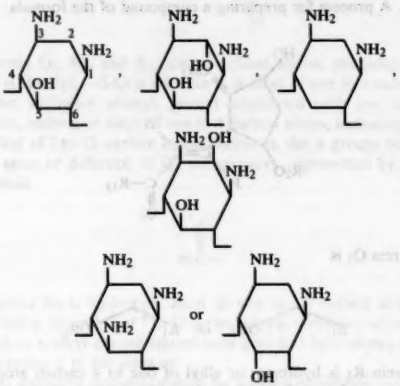


the bond between X and Y being a (1→4)-glycosidic bond in each case, which comprises cleaving a compound of the formula

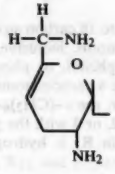


(III)

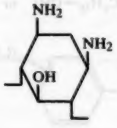
in which
Y' is a radical



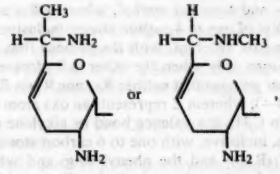
which is linked glycosidically with the radical X in the 4-position and glycosidically with the garosaminyl radical attached to said radical Y' in the 6-position and
in which
X is a radical of the formula



when Y' is a radical of the formula



X is a radical of the formula



in free form or in the form of an N-protected derivative, by treatment with an oxidizing agent selected from the groups consisting of manganese dioxide, sodium periodate, potassium hexacyanoferrate-III and potassium permanganate so as to product groups which are present and isolating the compound of the formula (I).

4,195,174

SYNTHESIS OF 2-AMINO-2-DEOXYGLYCOSES AND 2-AMINO-2-DEOXYGLYCOSIDES FROM GLYCALS

Raymond U. Lemieux, and R. Murray Ratcliffe, both of Edmonton, Canada, assignors to Chembiomed Ltd., Edmonton, Canada

Filed Apr. 7, 1978, Ser. No. 894,366
Claims priority, application United Kingdom, Apr. 14, 1977, 15536/77
Int. Cl.[2] C07H *11/02*
U.S. Cl. 536—18 **22 Claims**

6. O-acylated-2-azido-2-deoxyglycosyl nitrates.

4,195,175

PROCESS FOR THE MANUFACTURE OF CHITOSAN

Quintin P. Peniston, Rte. 7, Box 7710, Bainbridge Island, Wash. 98110, and Edwin L. Johnson, Rte. 5, Box 4246, Issaquah, Wash. 98027

Filed Jan. 3, 1978, Ser. No. 866,793
Int. Cl.[2] C08B *37/08*
U.S. Cl. 536—20 **3 Claims**

1. A process wherein an alkali solution is used for the deacetylation of ground chitin to yield a soluble chitosan product and in which the alkali solution is recovered and reused in the process, that comprises, kneading the ground chitin with 2 to 7 parts of 35 to 50 percent sodium hydroxide solution per part of chitin, heating the resulting mixture to from 40° to 80° C., packing the mixture in containers to expel entrapped air, sealing the containers and displacing residual air with nitrogen, holding the mixture in a quiescent state at 40° to 80° C. for from 160 to 40 hours, removing the alkali solution, washing and drying the resulting chitosan product, and recovering the removed alkali solution and reusing the same in said process.

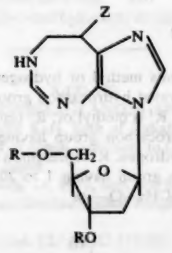
4,195,176

IMIDAZOLE COMPOUNDS, METHODS FOR THEIR PRODUCTION AND CONVERSION OF SAID COMPOUNDS INTO (R)-3-(2-DEOXY-β-D-ERYTHRO-PENTOFURANOSYL)-3,6,7,8-TETRAHYDROIMIDAZOL[4,5-D][1,3]DIAZEPIN-8-OL

David C. Baker, and Sterling R. Putt, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 841,098, Oct. 11, 1977, Pat. No. 4,117,229.
This application Jun. 23, 1978, Ser. No. 918,255
Int. Cl.[2] C07H *17/02*; A61K *31/70*; C07D *235/00*
U.S. Cl. 536—24 **7 Claims**

1. A compound of the formula

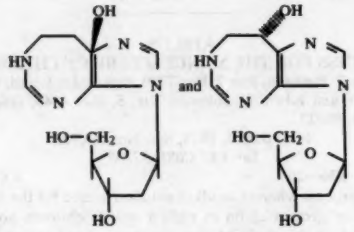


and acid-addition salts thereof, wherein Z is ~OH or =O and R is hydrogen or Acyl of the formula R^1

wherein R^1 is a radical having up to twelve carbon atoms, with proviso that when Z is —OH, R is Acyl of the formula R^1

wherein R^1 is a radical having up to twelve carbon atoms.

7. A process for preparing (R)-3-(2-deoxy-β-D-erythro-pentofuranosyl)-3,6,7,8,-tetrahydroimidazol[4,5-d][1,3]diazepin-8-ol which comprises resolving a mixture of compounds of the formulae



using reverse-phase chromatography employing a derivatized column of silica gel and a polar solvent system.

4,195,177

HYDROXYALKYL-ETHERIFIED GLYCOLIPID ESTER

Shigeo Inoue, Saitama; Yoshiharu Kimura, Ichikawa, and Manzo Kinta, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

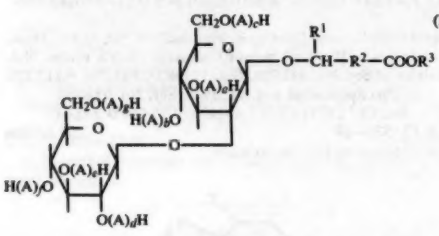
Filed Nov. 21, 1978, Ser. No. 962,664

Claims priority, application Japan, Mar. 3, 1978, 53/24306

Int. Cl.[2] **C07H** *15/08, 13/04*

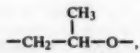
U.S. Cl. 536—116 **4 Claims**

1. A hydroxyalkyl-etherified glycolipid ester represented by the formula (I),



(I)

wherein R^1 represents methyl or hydrogen, R^2 represents a saturated or unsaturated hydrocarbon group having 11 to 15 carbon atoms when R^1 is methyl or, R^2 represents a saturated or unsaturated hydrocarbon group having 12 to 16 carbon atoms when R^1 is hydrogen, R^3 represents a saturated or unsaturated hydrocarbon group having 1 to 20 carbon atoms, A represents —CH_2—CH_2—O— or



and a,b,c,d,e,f and g represent integers whose sum ranges from 1 to 60.

4,195,178

METHYLENECYCLOPENTANE DERIVATIVES

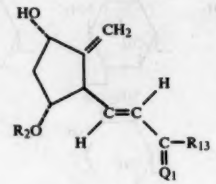
Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 764,332, Jan. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 691,792, Jun. 1, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,689

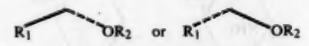
Int. Cl.[2] **C07D** *407/08, 407/14*

U.S. Cl. 542—426 **7 Claims**

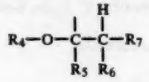
1. A process for preparing a compound of the formula



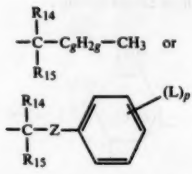
wherein Q_1 is



wherein R_1 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 is tetrahydropyranyl, tetrahydrofuranyl, or a group of the formula



wherein R_4 is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_5 and R_6, taken together, are —$(CH_2)_b$—O—$(CH_2)_c$—, b is one, 2, or 3, and c is one, 2, or 3 with the proviso that b plus c is 2, 3, or 4, and wherein R_7 is hydrogen or phenyl; and wherein R_{13} is

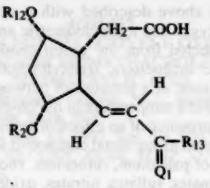


(1)

(2)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —$CR_{14}R_{15}$— and terminal methyl, wherein R_{14} and R_{15} are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_{14} and R_{15} is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_{14} nor R_{15} is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_{14}R_{15}$— and the phenyl ring; and wherein L is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_{16}— wherein R_{16} is alkyl of one to 4 car-

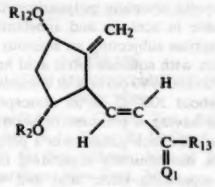
bon atoms, inclusive, and p is zero, one, 2, or 3, with the proviso that not more than two L's are other than alkyl and when p is 2 or 3 the L's are either the same or different; which comprises starting with a compound of the formula



wherein Q_1, R_2, and R_{13} are as defined above, and wherein R_{12} is (1) silyl, $-Si(A)_3$ wherein A is alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one or 2 fluoro, chloro, or alkyl of one to 4 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive, the A groups being the same or different; or (2) carboxyacyl, represented by the formula

wherein R_9 is hydrogen, alkyl of one to 19 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive, wherein alkyl or aralkyl are substituted with zero to 3 halo atoms; and subjecting it to the steps of

(a) oxidative decarboxylation by treating in solution with a copper (II) salt and a lead (IV) salt followed by thermal or photochemical decarboxylation to form a compound of the formula



wherein Q_1, R_2, R_{12}, and R_{13} are as defined above; and

(b) replacing the R_{12} groups of the product of step "a" with hydrogen by base hydrolysis.

4,195,179

5-(INDOL-3-YLMETHYLENE)-1,3-DIMETHYL-2-METHYLAMINO-4-IMIDAZOLIDINONE

Robert J. Wells, and Peter T. Murphy, both of Cromer, Australia, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 2, 1977, Ser. No. 830,242

Claims priority, application United Kingdom, Sep. 7, 1976, 36997/76

Int. Cl.² C07D *403/00*

U.S. Cl. 542—444 **3 Claims**

1. Essentially pure (E)-5-(indol-3-ylmethylene)-1,3-dimethyl-2-methylimino-4-imidazolidinone.

4,195,180

SULFAM (NA) PHTHALEINS

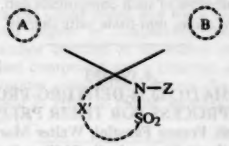
Alan L. Borror, Lexington; Louis Cincotta, Andover; Ernest W. Ellis, Carlisle, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1977, Ser. No. 836,067

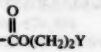
Int. Cl.² C07D *275/06, 417/10, 279/02*

U.S. Cl. 544—33 **9 Claims**

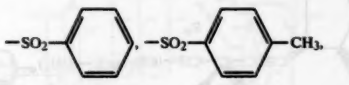
1. A compound of the formula



wherein A is a 4'-hydroxynaphthyl moiety; B is a naphthyl moiety; X' represents the atoms necessary to complete a ring-closing moiety selected from a 2,3-dihydrobenz[d]isothiazole-1,1-dioxide moiety and a 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide moiety; and Z is the moiety



wherein Y is an electron-withdrawing group selected from —CN, $-SO_2CH_3$,



$-COCH_3$ and $-SO_2N(CH_2Ph)_2$.

4,195,181

1,3,4-THIADIAZOLE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Carl Metzger, Wuppertal; Ludwig Eue, and Robert R. Schmidt, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 433,604, Jan. 15, 1974, abandoned. This application Feb. 24, 1977, Ser. No. 771,729

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1973, 2303079

Int. Cl.² A01N *9/12*; C07D *417/04*

U.S. Cl. 544—316 **4 Claims**

1. A compound selected from the group consisting of 1-[5-tert.-butyl-1,3,4-thiadiazolyl-(2)]-3-methylhexahydropyrimidin-2-one, 1-[5-trifluoromethyl-1,3,4-thiadiazolyl-(2)]-3-methylhexahydropyrimidin-2-one, and 1-[5-ethylsulfonyl-1,3,4-thiadiazolyl-(2)]-3-methylhexahydropyrimidin-2-one.

4,195,182

TRANS-Δ^2-PROSTAGLANDIN ANALOGUES

Masaki Hayashi; Seiji Kori, both of Takatsuki, and Takanori Okada, Osaka, all of Japan, assignors to Ono Pharmaceutical Co. Ltd., Osaka, Japan

Filed Aug. 12, 1977, Ser. No. 824,384

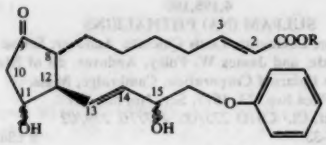
Claims priority, application United Kingdom, Aug. 23, 1976, 35080/76

Int. Cl.² C07C *177/00*

U.S. Cl. 180—53 **11 Claims**

1. A compound of the formula:

VI



(wherein R represents a hydrogen atom or a methyl group, and the double bonds between C_2–C_3 and C_{13}–C_{14} are trans) and cyclodextrin clathrates of such compounds and, when R represents a hydrogen atom, non-toxic salts thereof.

4,195,183

ω-NOR-AROMATIC-13,14-DEHYDRO-PROSTAGLANDINS AND PROCESS FOR THEIR PREPARATION

Carmelo Gandolfi; Franco Faustini; Walter Moretti; Mario M. Usardi, and Roberto Ceserani, all of Milan, Italy, assignors to Farmitalia Certo Erba S.p.A., Milan, Italy

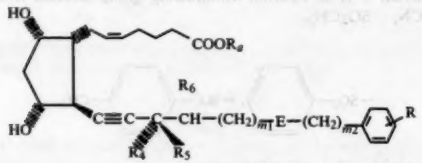
Division of Ser. No. 833,609, Sep. 15, 1977, which is a division of Ser. No. 786,802, Apr. 12, 1977. This application May 2, 1978, Ser. No. 901,999

Claims priority, application Italy, Jun. 1, 1976, 23826 A/76; Dec. 16, 1976, 30458 A/76

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—53 **3 Claims**

1. An optically active or racemic PGF_α compound of the formula



wherein:

R_α is hydrogen, C_1–C_{12} alkyl or a cation of a pharmaceutically of veterinarily acceptable base;

one of R_4 and R_5 is hydrogen and the other is hydroxyl or C_1–C_6 alkoxy;

R_6 is hydrogen or C_1–C_4 alkyl;

each of m_1 and m_2 is independently zero, 1, 2 or 3;

E is oxygen or sulphur

R is hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy or C_1–C_6 trihaloalkyl.

4,195,184

PREPARATION OF UNSATURATED MONOESTERS BY CATALYTIC OXIDATIVE CARBONYLATION OF DIOLEFINS

Haven S. Kesling, Jr., Drexel Hill, and Lee R. Zehner, Media, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

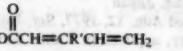
Filed May 26, 1978, Ser. No. 910,058

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

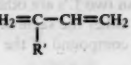
Int. Cl.[2] C07C *69/52*

U.S. Cl. 560—207 **24 Claims**

1. A process for the preparation of a diene monoester having the formula



wherein R is an alkyl group of from 1 to 4 carbon atoms and R′ is hydrogen or a methyl group, which comprises reacting a diolefin of the formula



wherein R′ is as above described with a mixture of carbon monoxide and oxygen and a stoichiometric amount of a dehydrating agent selected from the group consisting of acetals, ketals, carboxylic orthoesters, trialkylorthoborates and 1,1-dialkoxycycloalkanes, at a pressure of between about 15 psig and 5000 psig and at a temperature in the range of about 25° C. to 200° C. in the presence of an effective amount of a catalytic mixture of a platinum group metal compound selected from the group consisting of palladium, ruthenium, rhodium, and platinum, halides, cyanates, sulfates, nitrates, oxides, oxalates, acetates, and trifluoroacetates or mixtures thereof, an organic mono- or poly-dentate ligand or coordination complex compound selected from the group consisting of alkyl, aryl and halogen-substituted phosphines, arsines, stibines, and alkali metal salts, and a copper (I), copper (II), iron (II) or iron (III) oxidant salt compound and recovering the desired diene monoester.

4,195,185

PROCESS OF PREPARING ORGANIC ACIDS

Johann G. D. Schulz, Pittsburgh, and Edward T. Sabourin, Allison Park, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 814,217, Jul. 5, 1977, Pat. No. 4,137,418, which is a continuation-in-part of Ser. No. 696,752, Jun. 16, 1976, Pat. No. 4,052,448. This application Jul. 12, 1978, Ser. No. 923,953

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.[2] C07G *51/20*

U.S. Cl. 562—407 **5 Claims**

1. A process for converting a carbonaceous material to a mixture of polycyclic aromatic polycarboxylic acids that is substantially soluble in acetone and substantially soluble in water which comprises subjecting an aqueous slurry containing coal to reaction with aqueous nitric acid having a concentration of about 5 to about 90 percent at a reaction temperature of about 15° to about 200° C. in an atmosphere containing molecular oxygen having a pressure of about 14.7 to about 1470 pounds per square inch gauge over a period of about 0.5 to about 15 hours, mechanically separating the solids in the resulting slurry, separating nitric acid and water from the resulting filtrate by distillation and then extracting the remainder of said filtrate with a polar solvent to obtain said mixture of polycyclic aromatic polycarboxylic acids.

4,195,186

PROCESS FOR PREPARING ORGANIC ACIDS

Johann G. D. Schulz, Pittsburgh, and Edward T. Sabourin, Allison Park, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jul. 12, 1978, Ser. No. 924,054

The portion of the term of this patent subsequent to Oct. 4, 1994, has been disclaimed.

Int. Cl.[2] C07C *51/20*

U.S. Cl. 562—407 **6 Claims**

1. A process for preparing a mixture of polycyclic aromatic polycarboxylic acids that is substantially soluble in acetone but substantially insoluble in water which comprises subjecting an aqueous slurry containing coal to reaction with aqueous nitric acid having a concentration of about 5 to about 90 percent at a reaction temperature of about 15° to about 200° C. in an atmosphere containing molecular oxygen having a pressure of about 14.7 to about 1470 pounds per square inch gauge over a period of about 0.5 to about 15 hours, mechanically separating the solids in the resulting slurry, extracting the resulting solids with a polar solvent to separate therefrom a mixture of polycy-

clic aromatic polycarboxylic acids substantially soluble in acetone but substantially insoluble in water and a mixture of polycyclic aromatic polycarboxylic acids substantially insoluble in acetone and substantially insoluble in water.

4,195,187

PROCESS FOR SELECTIVELY OXIDIZING ISOBUTYLENE TO METHACROLEIN AND METHACRYLIC ACID

Thomas H. Vanderspurt, Gillette, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,712
Int. Cl.[2] C07C *45/04, 51/32, 57/04*
U.S. Cl. 562—545 **4 Claims**

1. In a process for selectively oxidizing isobutylene to methacrolein and methacrylic acid, the improvement which comprises contacting isobutylene with oxygen in vapor phase in the presence of an oxidation catalyst produced by a method which comprises (1) preparing an aqueous solution of ammonium molybdate; (2) dissolving in the said aqueous solution at least one water-soluble compound of an element selected from phosphorus, manganese, germanium, zirconium, tin, tellurium, cerium and hafnium; (3) admixing with said resulting aqueous solution in (2) at least one water-insoluble compound of a metal selected from titanium, vanadium, niobium, antimony, and tantalum to form a suspension; (4) removing the aqueous phase of said suspension and recovering a solid catalyst precursor; (5) heating said solid catalyst precursor at a temperature between about 150° C. and 300° C. for a period of time between about 1 and 48 hours; (6) compressing the dried catalyst precursor under a pressure of between about 40,000 and 80,000 psi; and (7) calcining the compressed catalyst precursor at a temperature between about 400° C. and 700° C. in a non-reducing atmosphere; wherein the atomic ratio of elements in the catalyst varies between about 0.3 and 2.4 atoms selected from phosphorus, manganese, germanium, zirconium, tin, tellurium, cerium and hafnium, and between about 0.4 and 3.6 atoms selected from titanium, vanadium, niobium, antimony and tantalum, per twelve atoms of molybdenum.

4,195,188

STEAM ASSISTED HYDROCARBON OXIDATION PROCESS

William E. Slinkard, Corpus Christi, Tex.; Anthony B. Baylis, Berkeley Heights, N.J.; Peter B. DeGroot, Corpus Christi, and Michael P. Hughes, Odessa, both of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,897
Int. Cl.[2] C07C *51/20, 53/08*
U.S. Cl. 562—549 **9 Claims**

1. A process for preparing acetic acid by the vapor phase oxidation of lower aliphatic hydrocarbons which process comprises reacting alkanes having 2–10 carbon atoms with an oxygen-containing gas in the vapor phase above atmospheric pressure at from about 220°–400° C. in the presence of a catalytic amount of a catalyst consisting essentially of a reduced vanadium oxide and steam wherein the molar ratio of steam to alkane is from about 0.1 to 2.0 and the molar ratio of oxygen to alkane is from about 0.05 to 1.0.

4,195,189

PREPARATION OF BIPHENOLS BY THE OXIDATIVE COUPLING OF ALKYLPHENOLS

Roger A. Earley, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Feb. 15, 1979, Ser. No. 12,374
Int. Cl.[2] C07C *37/00, 39/12*
U.S. Cl. 568—730 **9 Claims**

1. A process for preparing carbon-carbon coupled condensation products from a 2,6-dialkylphenol which comprises contacting the 2,6-dialkylphenol in a molten state with an oxidizing agent consisting essentially of activated basic cupric oxide having a surface area of from 5 to about 50 m^2/gram.

4,195,190

PREPARATION OF ETHYLENE GLYCOL

Thomas R. Bierschenk, Corpus Christi; Rowland Pettit, Austin, and Donald R. Nielsen, Corpus Christi, all of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 892,791
Int. Cl.[2] C07C *29/02, 31/20*
U.S. Cl. 568—860 **4 Claims**

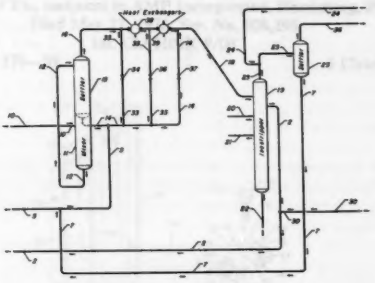
1. In a process for preparing ethylene glycol wherein ethylene, oxygen and water are reacted in the presence of a catalyst at a moderately elevated temperature under a pressure sufficient to maintain the liquid phase and for a time sufficient to effect the desired degree of conversion, the improvement wherein said catalyst consists of an iodine source which is iodine or an iodine compound and a bromine source which is bromine or a bromine compound wherein the molar ratio of bromine, expressed as HBr, to iodine, expressed as HI, is not more than about 1:1.

4,195,191

NON-REGENERATIVE HF ALKYLATION PROCESS

William G. Boney, Rolling Meadows, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 562,699, Mar. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 360,258, May 14, 1973, abandoned. This application Mar. 25, 1976, Ser. No. 670,491
Int. Cl.[2] C07C *3/54*
U.S. Cl. 585—706 **8 Claims**



1. A process for the alkylation of an isoparaffin with an olefin, to produce a normally liquid alkylate product, which process comprises the steps of:

(a) reacting said isoparaffin with said olefin, in admixture with a hydrogen fluoride catalyst, in an alkylation reaction zone, at alkylating conditions resulting in a reaction product effluent containing (i) normally liquid alkylate, (ii) unreacted isoparaffin, (iii) hydrogen fluoride catalyst and, (iv) polymer products;

(b) introducing said reaction product effluent into a separation zone and therein settling the same into (i) a liquid hydrocarbon phase and, (ii) a liquid hydrogen fluoride phase containing said polymer products;

(c) recycling a first portion of said liquid hydrogen fluoride phase to said reaction zone for contact therein with said isoparaffin and olefin;

(d) heating said liquid hydrocarbon phase to a tempeerature greater than the temperature of said reaction product effluent, and in the range of about 125° F. to about 200° F.;

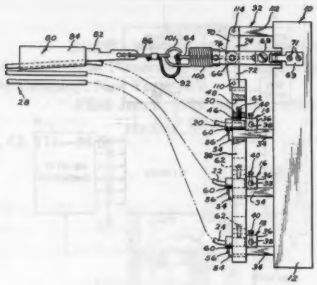
(e) commingling a second unheated portion of said liquid hydrogen fluoride phase with said heated hydrocarbon phase, in an amount which is soluble in said heated hydrocarbon phase; and,

(f) stripping the resulting mixture, in a stripping zone, in countercurrent contact with an isoparaffin-containing stream and separately removing therefrom (i) unreacted isoparaffin with residual hydrogen fluoride and, (ii) said normally liquid alkylate product, containing polymer products.

4,195,192
SAFETY DISCONNECT SWITCH FOR SUSPENDED CABLES

James W. Hackney, New Albany, and Edwin E. Glasscock, Clarksville, both of Ind., assignors to Hackney-Glasscock, Inc., New Albany, Ind.

Filed Oct. 2, 1978, Ser. No. 947,609
Int. Cl.[2] H02G 7/18
U.S. Cl. 174—40 R 18 Claims



14. A safety disconnect switch for use with a suspended electrical cable extending between anchors and comprising:

a. a base means serving as an anchor at one end of the cable span;

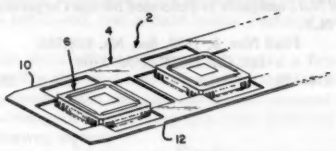
b. quick-release connector means for joining incoming power supply lead wires to the terminal ends of the wires of a suspended electrical cable;

c. detent switch means comprising a first resilient wire anchoring means for attachment to a given wire of the electrical cable at a point remote from the terminal end of that wire, a second releasable locking means for holding the resilient wire anchoring means to the base means, and trigger means for opening the releasable locking means upon a predetermined tension force being exerted on the given wire of the cable.

4,195,193
LEAD FRAME AND CHIP CARRIER HOUSING

Dimitry Grabbe, Lisbon Falls, Me., and Ronald Patterson, Dauphin, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 23, 1979, Ser. No. 14,397
Int. Cl.[2] H05K 1/04
U.S. Cl. 174—52 FP 16 Claims



1. The combination of a chip carrier housing and a lead frame, said housing and lead frame being capable of receiving integrated circuit chips in a range of sizes and having varying numbers of terminal pads thereon,

said lead frame comprising a plurality of leads extending radially from the geometric center of said lead frame, each of said leads having an inner end portion, an intermediate portion, and an outer end portion, said inner end portion of each of said leads being proximate to the center of said lead frame, said outer end portion being remote from said center, and said intermediate portion being between said inner and outer end portions,

at least one of said leads being a composite lead, said inner end portion of said composite lead comprising a trunk lead and branch leads, said trunk lead extending from said center of said lead frame, said branch leads extending from the side edges of said trunk lead at spaced intervals and at increasing distances from said center of said lead frame,

said housing comprising a plastic frame-like structure molded onto said intermediate portions of said leads, said frame like structure having oppositely directed faces, external laterally facing sidewall portions and internal side wall portions, said inner end portions of said leads extending radially from said internal sidewall portions in a plane which is between said oppositely directed faces, and

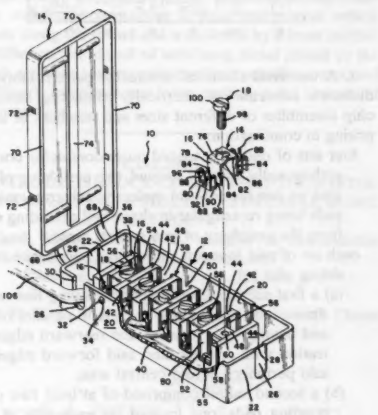
a web molded integrally with said frame, said web being between said oppositely directed faces and extending from said internal sidewall portions substantially to said center of said lead frame, said inner end portions of said leads being supported by said web whereby,

an integrated circuit chip having dimensions which lie within a predetermined range can be packaged in said chip carrier housing by removing a portion of said web and portions of said inner ends of said leads and forming an opening in said web which is dimensioned to receive said chip, and the number of leads available for electrical connections to said chip can be increased by removing portions of said inner end portion of said trunk lead whereby said branch leads become available for electrical connections to said chip.

4,195,194
JUNCTION BOX

Charles W. Kuster, Mt. Joy, and Floyd H. Renshaw, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 22, 1978, Ser. No. 908,295
Int. Cl.[2] H01R 9/08
U.S. Cl. 174—59 3 Claims



1. A junction box, comprising:

a. a base member of insulating material having a floor and upstanding walls to define a compartment;

b. a structure within the compartment consisting of a plurality of vertical walls which define a plurality of cells, each cell being electrically isolated from another,

c. barrier means positioned in each cell adapted to divide the cell into two cavities, further, each of said vertical walls having a vertical rib near said barrier means to define a vertical channel therebetween;

d. a plurality of conductive terminals having a U-shaped spring section at one end and a terminating section at another end, said terminals being positioned in the cavities with the legs of the U-shaped spring section extending onto the barrier means; and

e. commoning means adapted to be removably biased against the legs of the two spring sections overlying the barrier means in each cell whereby

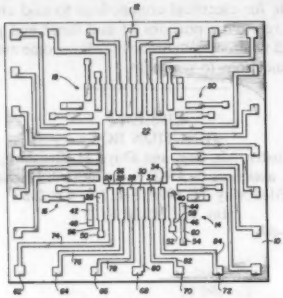
the two terminals therein may be selectively electrically joined.

4,195,195

TAPE AUTOMATED BONDING TEST BOARD

William R. R. de Mirands, Clearwater, Fla., and Edwin R. Smith, Jamestown, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 28, 1978, Ser. No. 946,490
Int. Cl.² H05K 1/02
U.S. Cl. 174—68.5 **12 Claims**



1. A universal electrical conductor pattern fabricated on a dielectric substrate for electrically contacting semiconductor chip assemblies of different sizes and numbers of leads, comprising in combination:

four sets of regularly spaced outer conductor bonding pads orthogonally located around the periphery of a central area on one face of said dielectric substrate, said bonding pads being rectangular in shape and extending outwardly from the periphery of said central area;

each set of said four sets of bonding pads respectively consisting of,

(a) a first subset of bonding pads having line rectangular dimensions located side by side in parallel relationship and having their forward and rearward edges in registration with one another, said forward edges defining said periphery of said central area;

(b) a second subset comprised of at least two outer lead bonding pads, one located on each side of said first subset and being arranged in parallel therewith and having respective forward edges spaced at predetermined distance back from the forward edges of said first subset of bonding pads and having respective rear edges in registration with the rear edges of said first subset; and

(c) a third subset of at least two outer lead bonding pads, one on each side of said second subset in parallel relationship therewith and having forward edges spaced back from the forward edges of said second subset and at least one bonding pad of said third subset having a rearward edge in registration with the rear edges of said first and second subset; and

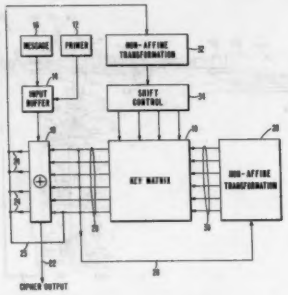
respective electrical conductor means in the form of interconnects and vias joined to the rear edges of said four sets of outer lead bonding pads.

4,195,196

VARIANT KEY MATRIX CIPHER SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,728
Int. Cl.² H04L 9/00
U.S. Cl. 178—22 **9 Claims**



1. A variant key cryptographic system comprising:

input means for introducing a plurality of electrical signals in binary form as message information to be enciphered or deciphered;

priming means for presenting a plurality of random binary signals to said input means to initialize the system prior to introducing message information thereto,

matrix storage means for arranging a cipher key in an n×m matrix array, wherein m and n are greater than 1;

a plurality of modulo-two adders interconnected with each other for adding selected elements from said matrix with binary signals obtained from said input means;

feedback means connected to said plurality of modulo-two adders;

non-affine transformation means connected to said feedback means for transforming the feedback signals present on the lines contained in said feedback means;

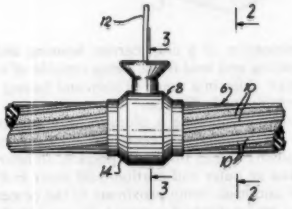
shift control means connected to said non-affine transformation means for rearranging selected matrix elements within said n×m matrix array.

4,195,197

CORROSION RESISTANT URD CABLE

George W. Kurr, Fair Lawn, and Michael Myers, Westfield, both of N.J., assignors to Federated Metals Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,755
Int. Cl.² H01R 3/06, 5/04
U.S. Cl. 174—78 **20 Claims**



7. In a URD cable comprising a central internal core, a semi-conductor material surrounding said core, an insulation material surrounding said semi-conductor material and surrounded by a second semi-conductor material, and a series of

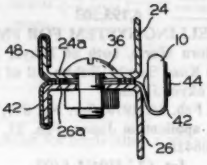
concentric neutral wires spirally applied around said second semi-conductor material and in contact with an anode connecting wire, the improvement comprising a casting of a low-melt alloy surrounding the URD cable over the area of contact between said neutral wires and said anode connecting wire so as to contact at least 50% of the surface area of each of said neutral wires and said connecting wire whereby a secure, long-lasting electrical connection is provided between said neutral wires and said anode.

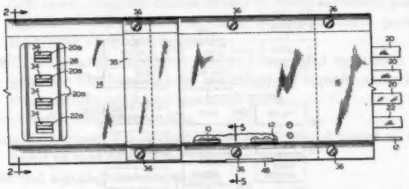
4,195,198

BUSWAY GROUND BUS JOINT

Werner A. Krause, Plantsville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,561
Int. Cl.² H02G 5/06
U.S. Cl. 174—94 S **6 Claims**





1. An electrical joint between first and second ground busbars of two busway sections joined end-to-end, wherein each busway section includes a housing consisting of top and bottom covers secured together along coextensive, lapped, laterally extending top and bottom cover flanges, and wherein at the joined ends of adjacent busway sections, the top cover overhangs the bottom cover of one busway section and the bottom cover overhangs the top cover of the other busway section such that the overhang portions of the top and bottom covers assume a lapped relation upon joining the two busway sections end-to-end, said ground busbar electrical joint comprising,

A. a first electrically conductive foil having a first portion wrapped in electrical connection with a termination of said first ground busbar and a second portion wrapped over the lateral flange of the overhanging portion of the top cover of one busway section;

B. a second electrically conductive foil having a first portion wrapped in electrical connection with a termination of said second ground busbar and a second portion wrapped over the lateral flange of the overhanging portion of the bottom cover of the other busway section,

(1) whereby, upon joining the busway sections end-to-end, the second portions of the first and second foils are in electrical contacting interengagement sandwiched between the lapped flanges of the overhanging portions of the top and bottom busway section covers; and

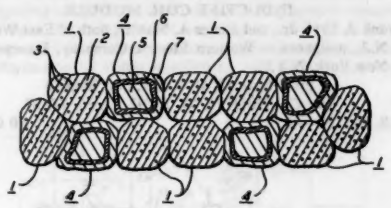
C. a fastener clamping the lapped flanges of the overhanging top and bottom cover portions together to exert joint clamping pressure on said electrical contacting second portions of said first and second foils.

4,195,199

SUPERCONDUCTING COMPOSITE CONDUCTOR AND METHOD OF MANUFACTURING SAME

Hans Hillmann, and Engelbert Springer, both of Rodenbach, Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,943
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736157
Int. Cl.² H01B 12/00
U.S. Cl. 174—128 S **13 Claims**



1. A superconducting composite conductor comprising:

(a) several strands with a superconductive intermetallic compound of at least two elements each containing at least one core of at least one higher melting point element of the compound having, at least on its surface, a layer of the compound, embedded in an alloy of at least one lower melting point element of the compound and a carrier metal; and

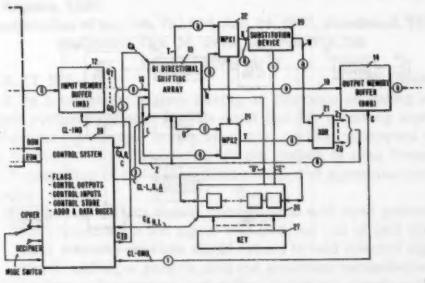
(b) at least one strand of a stabilizing metal of high thermal and electric conductivity which is normally conducting at the operating temperature of the superconducting composite conductor containing at least one region which extends along the strand and is enclosed by a layer inhibiting diffusion, the strand of stabilizing metal joined to the strands with the superconductive intermetallic compound by diffusion of at least one lower melting point element of the compound.

4,195,200

KEY CONTROLLED BLOCK-CIPHER CRYPTOGRAPHIC SYSTEM EMPLOYING A MULTIDIRECTIONAL SHIFT MATRIX

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1976, Ser. No. 701,060
Int. Cl.² H04L 9/00
U.S. Cl. 178—22 **15 Claims**



1. A Block-Cipher Cryptographic System for enciphering-/deciphering a block of binary data under the control of a unique binary key, said system including a multidirectional shift matrix capable of shifting in at least two directions along a predetermined coordinate of said matrix said system further

including means for loading said matrix with a block of data to be cryptographically transformed, means for loading said binary key, means for causing said matrix to shift to a predetermined distance along a coordinate of said array which is a function of said key, end around connection means for said array for transferring data shifted out of one edge thereof back into the opposite edge, and means for continuing said shifting operations for a predetermined number of rounds until the cryptographic transformation process is completed.

4,195,201

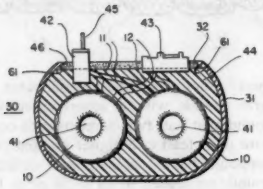
INDUCTIVE COIL MODULE

Frank J. Gryl, Jr., and James A. Mahler, both of East Windsor, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 10, 1978, Ser. No. 904,653

Int. Cl.[2] H01F *17/08, 15/02, 15/10, 27/30*

U.S. Cl. 178—46 **10 Claims**



1. A coil module, comprising:

a housing having a substantially oval cross section and a plurality of leaded inductive coils therein;

a potting compound encapsulating the coils;

a portion of the housing overhanging the potting compound;

a hardened material, covering the potting compound, captured between the overhang and the potting compound; and

at least one connector embedded in the hardened material with a portion thereof accessible through an opening in the housing.

4,195,202

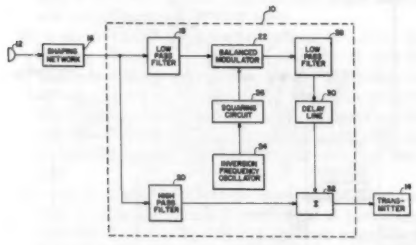
VOICE PRIVACY SYSTEM WITH AMPLITUDE MASKING

Arnold M. McCalmont, Acton, Mass., assignor to Technical Communications Corporation, Concord, Mass.

Filed Jan. 3, 1978, Ser. No. 866,244

Int. Cl.[2] H04K *1/04*

U.S. Cl. 179—1.5 S **16 Claims**



1. Apparatus for encoding a variable amplitude analog information signal in the audio frequency range for transmission in a privacy mode to a remote receiver where the signal is to be recovered in a clear mode, the analog information signal comprising a voice signal corresponding to speech having a discernible cadence and intersyllabic generation rate, said apparatus comprising:

A. means for splitting the voice signal into at least two separate frequency bands;

B. means for time delaying at least one of said frequency bands relative to the other of said frequency bands by a predetermined time delay increment;

C. means for recombining said time delayed frequency band with the other of said frequency bands to produce a composite signal for transmission; and

D. said predetermined time delay increment being selected so that it approximates in value the time constant of the cadence and intersyllabic generation rate of the speech so that relatively high amplitude portions of said delayed frequency band appear in said composite signal at times of occurrence of relatively low amplitude portions of the other of said frequency bands to provide substantial amplitude smearing in said composite signal.

4,195,203

NOISE CANCELLING SYSTEM FOR FM RECEIVER

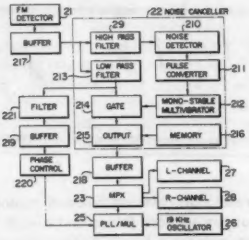
Koichi Sakai; Satoru Horie, both of Tokyo; Shinji Kitahara, Kauwasaki, and Kozo Suzuki, Tokyo, all of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Feb. 14, 1978, Ser. No. 877,723

Claims priority, application Japan, Feb. 22, 1977, 52-17755; Sep. 9, 1977, 52-108418

Int. Cl.[2] H04H *5/00*

U.S. Cl. 179—1 GD **2 Claims**



1. A noise-cancelling system for FM receivers wherein the output of an FM detector circuit is supplied to a multiplex demodulation circuit through a noise canceller circuit, said noise canceller circuit comprising:

a high-pass filter having an input coupled to receive the output of said FM detector circuit, and an output;

first circuit means coupled for detecting pulsive noise at said high-pass filter output and providing at an output a control signal when said pulsive noise is detected;

a low-pass filter having an input coupled to receive the output of said FM detector circuit, and an output providing a stereo composite signal;

a gate circuit having an input responsive to said control signal and an input coupled to receive said stereo composite signal, said gate circuit normally passing said stereo composite signal to said multiplex demodulation circuit and interrupting said stereo composite signal when said control signal indicates that pulsive noise is detected by said first circuit means; and

storage means coupled for supplying to said multiplex demodulation circuit, during said interruption, a DC signal representative of an output of said gate circuit which is provided immediately prior to said interruption;

said noise-cancelling system further including:

second circuit means coupled for receiving said stereo composite signal from said low pass filter and deriving therefrom a 19 KHz pilot signal; and phase-locked loop and oscillator circuit means coupled for receiving said 19 KHz pilot signal and generating and supplying to said multiplex

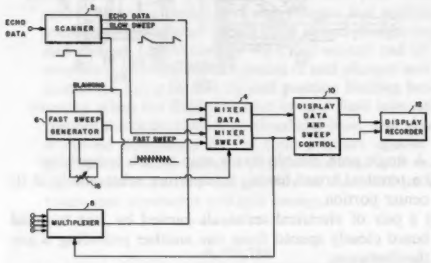
demodulation circuit and 38 KHz signal in synchronism with said 19 KHz pilot signal.

4,195,204

SIGNAL MIXER CIRCUIT

Gary L. Troutman, Littleton, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 14, 1976, Ser. No. 676,864
Int. Cl.² H04J 3/16
U.S. Cl. 370—84 **4 Claims**



1. A control circuit for controlling a recording instrumentality comprising,

first signal generator means,

said first signal generator means being operative to generate first control signals characterized in being sawtooth pulse signals of relatively slow ramp with successive pulses occurring at spaced intervals,

said first signal generator means being also operative to generate blanking signals, said blanking signals occurring coincidently with said sawtooth pulse

first buffer amplifier means,

coupliing means for applying said first control signal to the input of said first buffer amplifier means,

second signal generator means,

said second signal generator means being operative to produce second control signals characterized in being sawtooth pulse signals of relatively fast ramp and of a significantly higher frequency than said first control signal,

second buffer amplifier means,

coupling means for applying said second control signals to the input of said second buffer amplifier means,

said last named coupling means including a switching means responsive to said blanking signal to block the application of said second control signals to said second buffer amplifier means during the occurrence of said first control signals,

output circuit means including a summing junction, and

means connecting the output of said first buffer amplifier means and the output of said second buffer amplifier means to said summing junction whereby output signals of said control circuit comprise a composite of interleaved signals of said first and second control signals.

4,195,205

SIGNAL TRANSFER SYSTEM FOR TIME DIVISION SWITCHING SYSTEMS

Michael Andre R. Henrion, Boulogne, France, and Marcel A. van Brussel, Hoboken, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 21, 1978, Ser. No. 918,296
Int. Cl.² H04J 3/12
U.S. Cl. 370—10 **7 Claims**

1. A signal transfer system for a time division switching system comprising:

at least one multiplex highway carrying a signaling channel and speech channels;

a network means for selectively connecting said speech channels to one another;

multiregister means connectable to said speech channels for receiving register signaling information therefrom;

a central processor having access to said network and to said multiregister means;

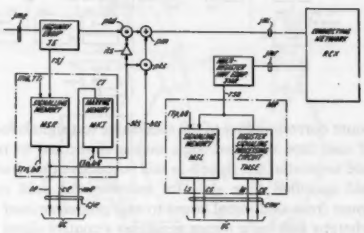
a line signaling controller including:

(a) a signaling memory comprising: a first plurality of memory cells;

(b) a marking memory comprising: a second plurality of memory cells;

(c) means for storing in each signaling memory cell line signaling information for a corresponding speech channel;

(d) means for storing in each marking memory cell an information bit for a corresponding speech channel, each said information bit being supplied by said central processor



and having a predetermined value when said corresponding speech channel may contain register signaling information;

(e) means for reading each of said pluralities of signaling memory and marking memory cells corresponding to a speech channel during a predetermined bit time slot of said corresponding speech channel;

(f) switching means for transmitting over said multiplex highway line signaling information stored in a signaling memory cell in response to the information bit stored in a corresponding marking memory cell having said predetermined value; and

selection means for selecting a signaling bit in information transmitted in a corresponding speech channel and for transmitting said line signaling bit to said multiregister means concurrently with register signaling information for said corresponding channel.

4,195,206

PATH TEST APPARATUS AND METHOD

James R. Baichtal, Las Altos, Calif., assignor to TRW, Inc., Los Angeles, Calif.

Continuation of Ser. No. 762,934, Jan. 26, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 954,780
Int. Cl.² H04J 3/14
U.S. Cl. 370—14 **12 Claims**

1. In a telephone system having an interface including an input portion connecting to an input line for receiving input telephone signals and having an output portion connected to an output line for transmitting output signals in time frames each consisting of a plurality of time slots, test apparatus comprising:

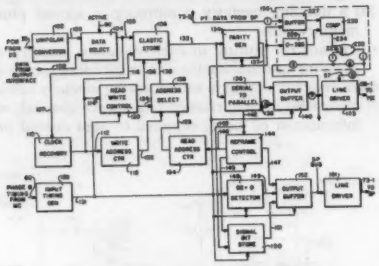
test signal generator means, connected to said input portion, for connecting a test signal to a selected one of said time slots whereby said test signal occurs in said selected time slot in said input portion, said test generator means including means for sending a plurality of said test signals in the same time slot in successive time frames,

control means connected to said test generator means for specifying said selected time slot,

means for connecting a data path between said input portion and said output portion whereby said test signal occurs in

a corresponding time slot in said successive time frames in said output portion, and

means for detecting said test signal occurring in said corresponding time slot in said output portion, said means for detecting including means for receiving said plurality of test signals in said successive time frames in said corresponding time slot including memory means for storing a control count from an initial count to a predetermined



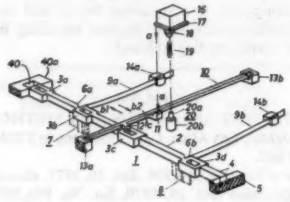
count corresponding to the successive test signals for each of said time slots and logic means connected to receive said sequential test signals in said successive time frames in said specified time slots for incrementing said control count from said initial count to said predetermined count whereby said logic means generates a control signal when said count reaches said predetermined count thereby verifying the continuity of said path between said input portion and said output portion.

4,195,207

TELEPHONE PUSH BUTTON SWITCH ASSEMBLY HAVING SEQUENTIAL OPERATED CONTACT STRUCTURE

Peter S. E. Sommansson, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 3, 1978, Ser. No. 866,251
Claims priority, application Sweden, Jan. 8, 1977, 7701358
Int. Cl.[2] H01H *9/00*; H04M *1/26*
U.S. Cl. 200—1 B 8 Claims



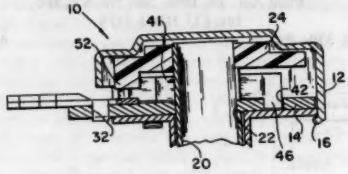
1. Switch apparatus comprising displaceable push-button means, a longitudinally slidable arm, means for displacing said arm between actuated and released positions in accordance with displaced and released positions of said push-button means, first and second oppositely directed wedge elements secured to said arm for displacement therewith, a pair of pivotal contact arms disposed on opposite sides of each of said wedge elements, each said wedge element having two offset actuator surfaces positioned with respect to said contact arms to pivotally move said contact arms in timed sequence as said longitudinally slidable arm travels between said actuated and released positions, and fixed contact means positioned adjacent said pivotal arms for undergoing opened and closed electrical switch contact therewith as said contact arms are pivotably moved and released.

4,195,208

SINGLE POLE DOUBLE THROW SNAP SWITCH

Mark L. Petre, and Ellis P. Lipp, both of Frankfort, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jul. 20, 1978, Ser. No. 926,438
Int. Cl.[2] H01H *19/32*
U.S. Cl. 200—63 R 6 Claims



1. A single pole, double throw snap switch comprising:

(a) a terminal board having an aperture substantially at its center portion,

(b) a pair of electrical terminals carried by said terminal board closely spaced from one another providing a gap therebetween,

(c) a third electrical terminal carried by said terminal board and extending into said gap,

(d) a spring contact blade having opposed ends, one of said ends pivotly carried in a slot provided in a wall of said aperture, the other end extending into said gap and engaging said third terminal,

(e) a shaft extending into said aperture and a rotor carried by said shaft to be rotatable therewith, and

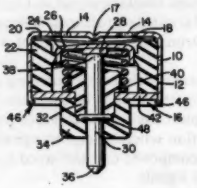
(f) actuator means carried by said rotor engaging said spring contact blade to move said spring blade between said first and third and between said second and third electrical terminals.

4,195,209

PRESSURE RESPONSIVE ELECTRICAL SWITCH AND MEANS OF CONTACT GAP SETTING THEREFOR

Kenneth P. Mlyniec, Lebanon, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 24, 1978, Ser. No. 927,655
Int. Cl.[2] H01H *35/34*
U.S. Cl. 200—83 R 7 Claims



1. A pressure responsive switch for changing electrical switching state in response to a fluid pressure which equals or exceeds a desired pressure threshold level, comprising:

a cylindrical conductive casing having a central, generally cylindrical cavity and defining at least one upper fluid inlet orifice communicating with said cavity, said casing defining a position limiting boss extending downward adjacent said inlet orifice into said cavity, and said casing further defining a lower opening communicating with said cavity,

a nonconductive elastic membrane extending across the upper portion of said cavity beneath said fluid inlet orifice

and said position limiting boss, and sealingly attached at its periphery to the interior of said casing,

a conductive, pressure actuatable plunger in the upper portion of said cavity including a pressure receiving surface directly beneath said membrane,

an electrical connector,

means mounting said electrical connector centrally in said cavity out of electrical contact with said casing such that a first end of said connector extends out of said cavity through said lower opening in said conductive casing and a second end of said connector is positioned in said cavity, and

means in said cavity providing an electrical path between said conductive casing and said plunger and applying a predetermined upward spring force to said plunger urging said plunger out of contact with said second end of said connector, the upward movement of said plunger and said membrane being limited by said position limiting boss,

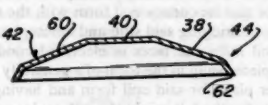
whereby when the fluid admitted by said fluid inlet orifice reaches the desired pressure threshold level, said plunger is moved downward by the fluid pressure against said spring force such that said plunger contacts said second end of said connector and provide an electrical path between said connector and said casing.

4,195,210

SWITCHING ASSEMBLIES

Walter R. Pounds, Lafayette, and Bill D. Dunlap, Longmont, both of Colo., assignors to KB-Denver, Inc., Frederick, Colo.

Filed Feb. 27, 1979, Ser. No. 15,808
Int. Cl.[2] H01H *1/24, 13/52*
U.S. Cl. 200—159 A **7 Claims**



1. In a switching assembly which includes an insulative substrate upon which is carried a plurality of conductive paths respective portions of which are selectively bridged upon depression of a resilient conductive contact element, the improvement comprising:

said contact element being generally in the shape of a dome but having a central region of substantially planar conformation from which the remainder of said dome slants integrally downward and outward to a lower marginal rim portion;

and said dome-shaped element being disposed adjacent to said substrate with at least a portion of said rim portion being in electrical and physical contact with one of said portions of one of said paths, said central region being generally in registry over another of said portions in another of said paths to enable connection between said central region and that other portion upon depression of said central region.

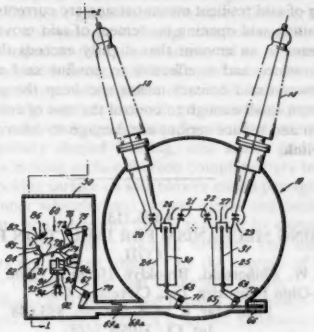
4,195,211

SINGLE POLE TRIP AND GANGED POLE CLOSING FOR MULTIPHASE HIGH-VOLTAGE POWER CIRCUIT BREAKERS

Wilfred A. Aslan, Seal Beach; Giovanni P. Guaglione, Irvine; James R. McCloud, Anaheim, and Henry G. Meier, Glendale, all of Calif., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Jun. 18, 1976, Ser. No. 697,332
Int. Cl.[2] H01H *3/00*
U.S. Cl. 200—153 D **10 Claims**

1. A high-voltage three-phase circuit breaker for a high-power electrical transmission system; said circuit breaker having separate tanks for containing each of the three circuit breaker phases; each of said three circuit breaker phases including contact interrupter means disposed within their respective tank and terminal bushings extending through the wall of each tank and connected to a respective contact interrupter means; each of said contact interrupter means being movable between a closed position and an open position; a respective contact operating mechanism for each of said contact interrupter means; each of said contact operating mechanisms of each of said three phases comprising a trip-free linkage connected to their respective said contact interrupter means and being adapted to hold their said respective contact



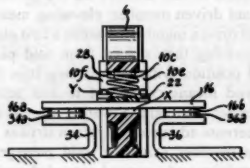
operating mechanism in their said closed position; biasing means connected to each of said contact interrupter means to bias each of said contact interrupter means to their said open position; respective trip means for each of said trip-free linkages of each of said three phases to enable the individual opening of said contact interrupter means of any of said phases independently of any of the other phases; and a single mechanical ganged closing mechanism mechanically connected to each of said trip-free linkages of each of said three phases, and operable to move each of said contact interrupter means to their said closed position in response to the operation of said single closing mechanism with minimum pole spread.

4,195,212

CONTACTOR HAVING HIGHER FAULT CURRENT WITHSTANDABILITY

Robert O. Graham, Milwaukee; John A. Rauenbuehler, New Berlin, and Albert C. Snowdon, Shorewood, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 6, 1977, Ser. No. 803,759
Int. Cl.[2] H01H *1/20, 1/50, 3/60*
U.S. Cl. 200—243 **4 Claims**



1. An electric switch having higher fault current withstandability comprising:

stationary contact means;

movable contact means;

and operating means for closing said movable contact means with respect to said stationary contact means comprising:

an electrically insulating contact carrier and means coupling the same to said operating means for movement thereby; and supporting means comprising resilient means supporting said movable contact means on said contact carrier so as to cause stressing of said resilient means when the movable contact means close thereby to afford adequate contact pressure and wear allowance:

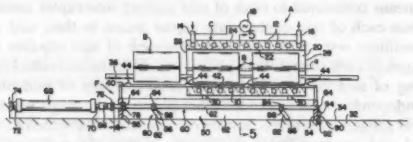
and means providing said switch with higher fault current withstandability comprising auxiliary stop means incorporated in said contact carrier effective upon blow-open of said contact means under high fault current conditions which causes opening movement of said movable contact means relative to said supporting means and further stressing of said resilient means causing arc currents to flow for limiting said opening movement of said movable contact means to an amount that slightly exceeds the full wear allowance and is effective to confine said arc currents between said contact means and keep the gap therebetween small enough to control the rate of energy dissipation and reduce serious arc damage to other parts of the switch.

4,195,213

FEEDING MECHANISM FOR INDUCTION HEATING COIL

Joseph W. Chiboroski, Brooklyn Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Mar. 6, 1978, Ser. No. 883,648
Int. Cl.[2] H05B *5/18*
U.S. Cl. 219—10.69 **21 Claims**



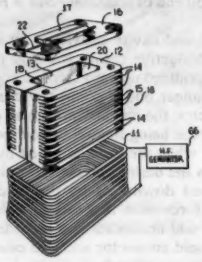
1. A mechanism for feeding a succession of elongated workpieces having a given length axially along a given path through an elongated workpiece receiving passage of a multiturn induction heating coil, said mechanism comprising: slide rail means fixedly positioned within and extending axially through said passage for supporting the said workpieces thereon for sliding advance movement therealong through said passage; a driven member extending longitudinally through and reciprocable axially of said passage and having at least two driving lugs spaced axially of said passage a distance exceeding said given length for engaging the workpieces resting on said slide rail means and slidably pushing them forwardly therealong in spaced relation to one another on the advance reciprocation stroke of said driven member; elevating means for selectively shifting said driven member between a first elevational position with said driving lugs spaced from said path and a second elevational position with said driving lugs in said path; and actuating rod means connected to and actuating both said driven member and said elevating means and reciprocable through alternate advance and return strokes for reciprocating said driven member axially of said passage between a first retracted position and a second extended position; said elevating means including cam means actuated by said actuating rod means for shifting said driven member from said first elevational position into said second elevational position during the initial portion of the said advance stroke of said power drive means to shift said driven member from said retracted position to said extended position and for shifting said driven member back into said first elevational position during the initial portion of the said return stroke of said power drive means.

4,195,214

APPARATUS FOR INDUCTION HEATING OF METAL PLATES WITH HOLES

Howard L. Gerber, Park Forest, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 700,494, Jun. 28, 1976, Pat. No. 4,104,498. This application Jan. 16, 1978, Ser. No. 869,770
Int. Cl.[2] H05B *5/18*
U.S. Cl. 219—10.79 **17 Claims**



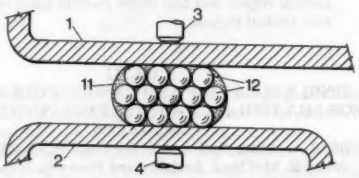
1. A flux concentrator for induction heating of preselected areas of metal plates, said flux concentrator comprising a transformer; said transformer comprising a single winding secondary coil form in the form of a thick wall tubular body of a selected height, said body having remote end faces, said body being interrupted by an axial slot extending from the exterior of said body to the interior thereof for the full height of said body, and a multiple winding primary coil wrapped around the exterior of said secondary coil form with the windings of said primary coil bridging said slot; and a nosepiece overlying one of said coil form end faces in electrical conducting relation, said nosepiece being in the form of a generally axially coextensive cover plate for said coil form and having a longitudinal slot therein for the full height thereof, said nosepiece slot being in alignment with said coil form slot with a portion of said nosepiece slot forming an axial extension of said coil form slot, and a shield telescoped over said primary coil for preventing radio-frequency currents from being introduced into adjacent machinery.

4,195,215

WELDABLE SEALANT FORMS

Robert W. Clarke, Box 1166, S-171 23 Solna, Sweden

Continuation of Ser. No. 771,660, Feb. 24, 1977, abandoned, which is a continuation of Ser. No. 610,440, Sep. 4, 1975, abandoned. This application Oct. 13, 1978, Ser. No. 951,047
Claims priority, application Sweden, Sep. 20, 1974, 7411829
Int. Cl.[2] B23K *11/10*
U.S. Cl. 219—91.21 **14 Claims**



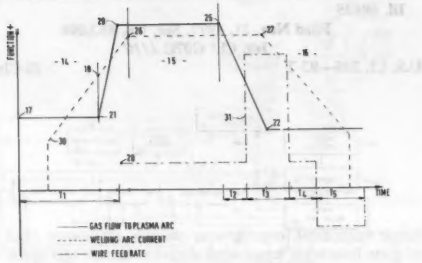
1. A method of welding two metal members together in which a sealant is used between mating surfaces, said sealant containing discrete non-spherical metal beads of a rounded shape and controlled as to bead size; and bringing the members together by spot welding through the beads, with the beads

providing spacing and gap filling functions as well as bridge metal in order to lessen depletion of the members being welded.

4,195,216
PLASMA WELDING

Derek J. Beauchamp, Gloucestershire, and Donald L. A. Weston, Bristol, both of England, assignors to Rolls-Royce Limited, London, England

Filed Mar. 13, 1978, Ser. No. 886,144
Claims priority, application United Kingdom, Mar. 18, 1977, 11642/77
Int. Cl.[2] B23K *9/10*
U.S. Cl. 219—121 P **5 Claims**

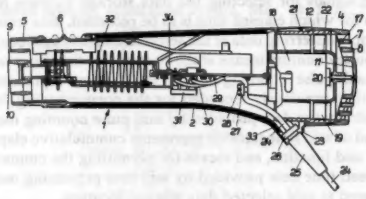


1. A method of terminating a plasma welding operation comprising the steps of: initiating the conclusion of a welding run to close the keyhole formed during the welding run by the plasma arc piercing the workpiece, and subsequently increasing the rate of feed of filler material to the weld.

4,195,217
HAIR DRYER

Heinrich Möller, Kelkheim, and Karl-Heinz Hoffmann, Wehrheim, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 878,071
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 2708581
Int. Cl.[2] H05B *1/00*; A45D *20/08*
U.S. Cl. 219—370 **10 Claims**

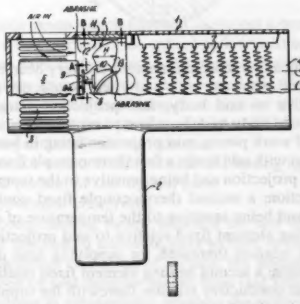


1. A portable hair dryer comprising:
a first generally semi-cylindrical grip member, said first grip member having a pair of longitudinal contoured edge portions, said first grip member further having a recessed lip portion at least at a first end thereof and at least a first interior locking surface adjacent a second end thereof;
a second generally semi-cylindrical grip member, said second grip member having a pair of longitudinal contoured edge portions, said contoured edge portions of said first and second grip members being of complimentary shape whereby said grip members may be engaged with one another by said edge portions to define a tubular housing having a substantially regular outer surface, said housing further having openings at oppositely disposed ends thereof, said second grip member also having a recessed lip portion at least at the first end thereof and at least a first interior locking surface adjacent the second end thereof;
heater means mounted within the housing defined by said grip members;
blower means mounted within the housing defined by said grip members, said blower means including a tubular air intake passage defining member, said intake passage defining member extending outwardly through the first end opening of said housing, said intake passage defining member having a locking surface thereon;
tubular air intake grid means, said intake grid means having an inner diameter greater than the outer diameter of said blower means passage defining member and an outer diameter equal to the outer diameter of an adjacent end portion of said housing, said intake grid means fitting over the outwardly extending part of said blower means passage defining member and said grip member lip portions whereby said intake grid means forms a first extension of said regularly shaped housing, said intake grid means having a locking surface thereon complimentary in shape to the locking surface on said blower means passage defining member whereby said blower means and intake grid means are non-releasably locked together by engagement of said complimentary locking surfaces and said grip members are secured together by the capture of the lip portions thereof within said intake grid means;
tubular exhaust grid means, said exhaust grid means having a first portion which defines a second extension of said housing, said exhaust grid means further including a plurality of resilient locking projections extending outwardly therefrom into the second end opening of said housing, said locking projections engaging said locking surfaces on the interior of said first and second grip members to thereby non-releasably connect said exhaust grid means to said grip members and simultaneously hold said grip member edge portions in the engaged condition; and
control switch means, said control switch means being mounted within said housing adjacent the second end opening thereof and including a movable actuator extending outwardly through an aperture in said housing to a point not exceeding the outer diameter of said housing in regions adjacent said aperture.

4,195,218
DRYER

Henry J. Walter, Wilton, and Roy W. White, Norwalk, all of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,543
Int. Cl.[2] H05B *1/02*
U.S. Cl. 219—370 **7 Claims**



1. A hair dryer having a housing comprising:
(a) an air inlet and an air outlet;

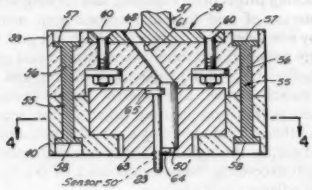
(b) electric heating means;
(c) a fan having a plurality of blades;
(d) a shaft having two ends, one end of which is secured to the axial center of said fan;
(e) motor means connected to the other end of said shaft for rotating said fan;
(f) a motor shroud rigidly connected to said motor and surrounding the fan blades;
(g) a first abrasive element rigidly attached to said motor shroud adjacent to said blades, whereby a portion of the loose hair which enters the dryer housing along with air through the air inlet and becomes entrapped about said blades is abraded by said first abrasive element during rotation of the fan blades and said abraded hair is discharged along with the air flowing through the dryer housing and out of the air outlet; wherein said motor includes bearing means surrounding said shaft, said bearing means providing a surface, and a second abrasive element rigidly attached to said surface, whereby a portion of said loose hair which enters the dryer and becomes entrapped about said motor shaft between the fan and motor bearing surface is abraded by said second abrasive element during rotation of the fan blades and said abraded hair is discharged along with the air flowing through the dryer housing and out of the air outlet wherein said first and second abrasive elements are shaped as discs.

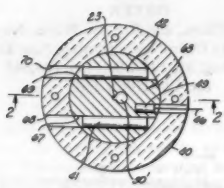
4,195,219

HEATING APPARATUS

Egon F. Friese, Tustin, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 19, 1978, Ser. No. 907,552
Int. Cl.[2] H05R 1/02
U.S. Cl. 219—388 **15 Claims**





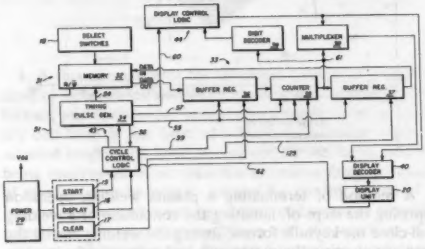
1. Heating apparatus comprising: a delivery head including a heat conductive storage body and a heat conductive projection fixed relative to said body, said projection extending outwardly of said body to deliver heat to each successive one of a plurality of work pieces, said projection being in heat conductive relation with said body; a first thermocouple fixed contiguous to said projection and being sensitive to the temperature of said projection; a second thermocouple fixed contiguous to said body and being sensitive to the temperature of said body; a first heating element fixed relative to said projection in heat conductive relation therewith for supplying heat directly to said projection; a second heating element fixed relative to said body in heat conductive relation therewith for supplying heat directly to said body; first means connected from said first thermocouple to said first heating element to keep said projection at a first predetermined approximately constant temperature, said first temperature being the working temperature of a work piece; and second means connected from said second thermocouple to said second heating element to keep said body at a second predetermined approximately constant temperature, said body having a size and said first and second means acting in a manner such that heat is quickly resupplied to said projection after heat therein has been conducted to a work piece so that said projection quickly regains said working temperature before engaging the next one of said work pieces thus making possible increased production.

4,195,220

PORTABLE ELAPSED TIME RECORDER

Stanley M. Bristol, 1470 Stonebridge Trail, Wheaton, Ill. 60178, and Norman E. Bullock, 7733 Belmont Ave., Elmwood Park, Ill. 60635

Filed Nov. 21, 1977, Ser. No. 853,098
Int. Cl.[2] G07C 1/10
U.S. Cl. 235—92 T **22 Claims**



1. In a time recording apparatus for providing a record of elapsed time for each of a plurality of different functions, the combination comprising: data processing means operable when enabled to provide elapsed time data, enabling means operable to enable said data processing means for a time interval during which elapsed time is to be recorded for one of said functions, said data processing means including timing means for providing timing pulses at a predetermined rate, and pulse counting means for counting said timing pulses during said time interval to provide said elapsed time data, data storage means having a plurality of individually addressable data storage locations, including a separate data storage location corresponding to each of said functions, select means manually operable to generate signals for selecting the data storage location for a function for which elapsed time is to be recorded, data transfer means for transferring data at the selected data storage location to said pulse counting means at the start of said time interval to preset said pulse counting means to a count representing elapsed time previously recorded for the corresponding function, whereby the data provided by said pulse counting means at the end of said time interval represents cummulative elapsed time for said function, and means for permitting the cummulative elapsed time data provided by said data processing means to be stored at said selected data storage location.

4,195,221

SCANNING FOCUSED LOCAL OSCILLATOR OPTICAL HETERODYNE IMAGING SYSTEM

Steven E. Moran, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 3, 1978, Ser. No. 921,663
Int. Cl.[2] H04N 7/18
U.S. Cl. 455—609 **15 Claims**

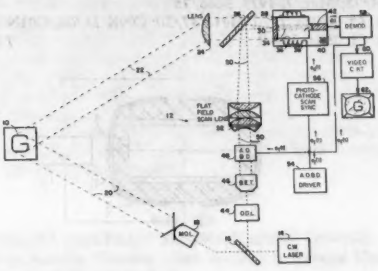
1. Optical heterodyne apparatus for viewing the image of an arbitrary object which is carried on the wavefront of a first coherent light signal, said apparatus comprising:

an array of light responsive elements, each of said light responsive elements having a light sensitive surface and comprising means for generating an electric signal that represents the light impinging upon its light sensitive surface;

lens means receiving said first coherent light signal for focusing said image on said array of light responsive elements;

means for providing second coherent light signal, the frequencies of said first and second coherent light signals being different;

focusing means for sequentially focusing said second coherent light signal within an Airy disc upon the light sensitive surface of each of said light responsive elements, each



light responsive element generating a heterodyne signal when said second coherent light signal is focused upon its light sensitive surface;

detection means for receiving said heterodyne signals, and for generating a set of signals in response to said heterodyne signals which is capable of providing a viewable representation of said image, and

signal exclusion means positioned between said light responsive elements and said detection means for preventing said detection means for receiving signals representing light of said first coherent light signal which are generated by any of said light responsive elenents except the light responsive element upon which said second coherent light signal is focused.

4,195,222

POWER-SUPPLY DEVICE FOR A MICROCHANNEL TUBE

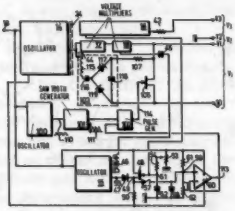
Jean-Pierre Fouilloy, Velizy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1978, Ser. No. 888,838

Claims priority, application France, Mar. 24, 1977, 77 08802

Int. Cl.[2] H01J *39/12*

U.S. Cl. 250—213 VT **12 Claims**



1. A power supply for a microchannel tube of the type which includes a screen, a microchannel plate having an input and an output, and a photocathode comprising:

first means for providing a substantially constant direct voltage between the output of the microchannel plate and the screen;

second means for providing a substantially constant direct plate voltage between the input of the microchannel plate and the output of the microchannel plate;

third means for superimposing a variable direct voltage on said direct plate voltage and for controlling said variable direct voltage as an inverse function of the average current flowing to the screen when a first range of illumination is incident on said tube; and

fourth means for providing a photocathode voltage between said photocathode and said input of said microchannel plate and for controlling said photocathode voltage as an inverse function of said average current flowing to the screen when a second range of illumination is incident on said tube;

said second range of illumination including higher illumination levels than said first range, the lowest illumination level in said second range being at least as high as the lowest illumination level in said first range.

4,195,223

APPARATUS FOR OPTICALLY SCANNING A SURFACE

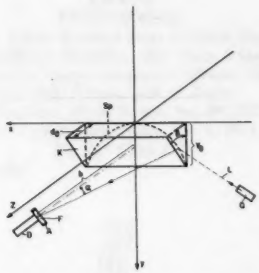
Udo Bergmann, Schwarzenbek, and Karl Klose, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,420

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703504

Int. Cl.[2] H01J *3/14*

U.S. Cl. 250—216 **4 Claims**



1. In an apparatus for scanning a surface of the type comprising:

light source means which function to project a beam of light along a first portion of an optical path to said surface and to scan said surface with said beam, whereby light is caused to issue from said surface and, in the case of a homogeneous non-textured surface, to issue with a greater intensity from a first portion of said surface than from a second portion of said surface and

light detector means which receive said issuing light along a second portion of said optical path;

the improvement comprising:

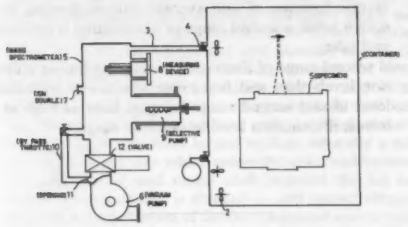
wedge compensating means disposed on said optical path which function to attenuate light so that, in the case of a homogeneous non-textured surface, the intensity of light received by said detector means from said first portion of the surface is substantially equal to the intensity of light received by said detector means from the second portion of said surface.

4,195,224

GAS LEAKAGE DETECTION APPARATUS

Georg Sänger, Voorschoten, and Alfred K. Franz, Lisse, both of Netherlands, assignors to Organisation Europeenne de Recherches, Paris, France

Filed Sep. 25, 1978, Ser. No. 945,630
Claims priority, application Belgium, Oct. 4, 1977, 181438
Int. Cl.[2] B01D *59/44*
U.S. Cl. 250—289 1 Claim



1. A gas leakage detection apparatus comprising a mass spectrometer with which there is associated a first pumping device for creating a relative vacuum in the apparatus, a selective pumping device having a first pumping speed for air and a second pumping speed for the gas which is to be analysed, said second pumping speed being lower than the said first pumping speed, and a throttling device connected between the selective pumping device and the first pumping device, this throttling device having an opening chosen so as to let through a flow which is very small compared with the flow produced by the selective pumping device for the air.

4,195,225

METHOD FOR ASSAYING ENDOTOXINS

Narbik A. Karamian, Bethesda, Md.

Continuation-in-part of Ser. No. 745,966, Nov. 29, 1976, Pat. No. 4,093,381. This application Jun. 2, 1978, Ser. No. 912,091
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.
Int. Cl.[2] G01J *1/42*
U.S. Cl. 250—373 6 Claims

1. A process for assaying endotoxins in aqueous liquids at levels as low as 1 to 5 parts per billion comprising the following steps:

(a) introducing a known volume of the sample into a sample cell having a length of at least 12 centimeters,

(b) maintaining the temperature of the sample between 20° and 30° C.,

(c) passing ultra violet radiation of a wave length between 200 and 800 nm thru said liquid sample in the cell,

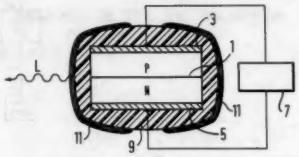
(d) measuring the absorbance of the detecting radiation at 258 nm.

4,195,226

LUMINESCENT MATERIAL AND PREPARATION AND USE THEREOF

David J. Robbins, Malvern, England, and Dieter H. Bimberg, Grenoble, France, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Munich, Fed. Rep. of Germany

Division of Ser. No. 742,539, Nov. 17, 1976, which is a continuation-in-part of Ser. No. 664,975, Mar. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 664,976, Mar. 8, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,419
Claims priority, application United Kingdom, Mar. 7, 1975, 9664/75; Mar. 7, 1975, 9665/75
Int. Cl.[2] G01T *1/20;* H01J *31/50;* C09K *11/08;* G01N *21/38*
U.S. Cl. 250—363 R 7 Claims



1. A scintillator arrangement comprising:

(a) a luminescent material which consists essentially of a pentaphosphate of the formula XP_5O_{14} constituting a solid matrix, a multiplicity of luminescent sites being uniformly distributed throughout said matrix, X being an ion of at least one rare earth metal;

(b) a source of ionizing radiation applied to said material, whereby secondary radiation is emitted by said material; and

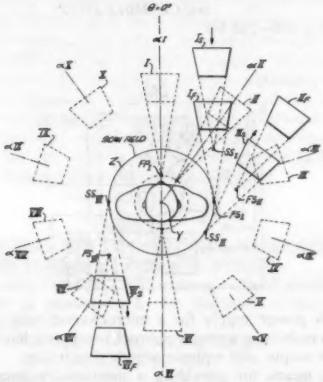
(c) means exposed to said secondary radiation for producing a perceptible signal in response to said secondary radiation.

4,195,227

WHOLE BODY IMAGING SYSTEM MECHANISM

Richard W. Carman, Foxboro, and Edward J. Doherty, III, Halifax, both of Mass., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,356
Int. Cl.[2] G02B *5/00*
U.S. Cl. 250—505 1 Claim



1. A scanning apparatus for an array of highly focused collimators comprising a collimator support frame for supporting

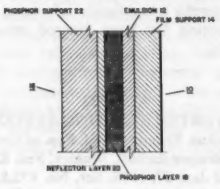
collimators in an inwardly focused array surrounding a scan field, said collimator supporting frame having opposed spaced apart support plates; a plurality of equally angularly spaced collimator mounts alternately moveably mounted on opposing surfaces of said support plates surrounding the scan field, said collimator mounts being moveable radially toward and away from the axis of said scan field; means for simultaneously moving all said collimator mounts such that alternate collimator mounts move in synchronism radially toward and away from the axis of the scan field; a plurality of carriage means, each moveably engaged to a respective collimator mount, being moveable on such respective collimator mount in a direction transverse to the said radial movement of such collimator mount, annular means rotatably mounted on said collimator support frame surrounding said scan field; a plurality of translating means each pivotally engaged to said annular means opposite and slidably engaged to a respective carriage means; means for rotating said annular means with respect to said collimator support frame to impart motion to each carriage means transverse to the radial movement of the collimator mount moveably engaged thereto; and means for rotating said collimator support frame a predetermined angular increment about the axis of the scan field.

4,195,228

COLOR CONTRAST RADIOGRAPHIC DEVICE

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 19, 1978, Ser. No. 907,441
Int. Cl.[2] G01J *1/58*
U.S. Cl. 250—483 **8 Claims**



1. An x-ray image converter which comprises a pair of phosphors each capable of converting x-radiation to visible wavelength radiation of different colors and one of said phosphors exhibiting differential absorption of the x-radiation in the 35–50 KeV region due to different K_α edge effects so as to provide a color shift in an associated color photographic film when exposed to said phosphors after passage through a photographed object.

4,195,229

X-RAY PHOTOGRAPHING APPARATUS

Tooru Suzuki, Atsugi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 30, 1977, Ser. No. 865,869
Claims priority, application Japan, Jan. 5, 1977, 52/149
Int. Cl.[2] G01N *21/34, 23/04*
U.S. Cl. 250—445 T **24 Claims**

1. An X-ray photographing apparatus comprising:

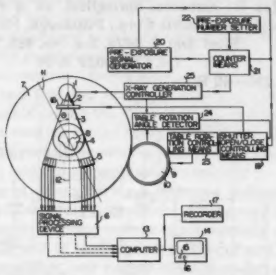
X-ray generating means for generating an X-ray pulse beam;

X-ray shielding means for shutting off the X-ray pulse beam emitted from said X-ray generating means;

means for determining when the output intensity of the X-ray pulse beam from said X-ray generating means reaches a substantially constant level and for generating a pre-exposure termination signal;

means for controlling said X-ray shielding means and for permitting it to be opened upon receipt of said pre-exposure termination signal; and

an X-ray generation controller responsive to said determining means when the output intensity of the X-ray pulse beam from said X-ray generating means does not reach said substantially constant level to maintain said X-ray shielding means in said X-ray pulse beam path and responsive to said controlling means when the output intensity of the X-ray pulse beam reaches said substantially constant level to remove said X-ray shielding means from said X-ray pulse beam path.

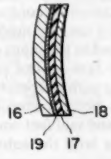


4,195,230

INPUT SCREEN

Saburo Ataka, Tokyo; Kiyohisa Inao, Hachioji; Kanetosi Tada, Nagano; Yoshinori Okamura, and Isamu Kimura, both of Yamanashi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of, Japan

Filed Mar. 28, 1978, Ser. No. 891,033
Claims priority, application Japan, Apr. 1, 1977, 52-36126
Int. Cl.[2] G01J *1/58*
U.S. Cl. 250—483 **11 Claims**

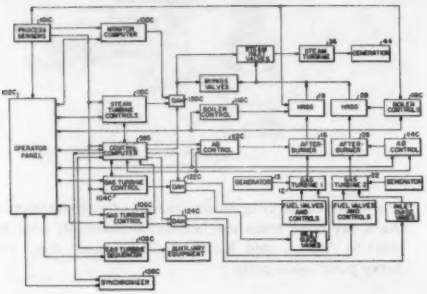


1. An input screen of an X-ray image intensifier tube comprising a substrate of aluminum or aluminum alloy; an evaporated aluminum film deposited on a major surface of said substrate, the surface of said evaporated aluminum film not adjacent said substrate being smooth; a continuous, smooth cesium iodide film deposited on said evaporated aluminum film, said evaporated aluminum film acting to substantially prevent unevenness, cracking and exfoliation of said cesium iodide film and to create a strong bond between the substrate and the cesium iodide film; and a photoelectric film deposited on said cesium iodide film, whereby degradation of a picture produced by said input screen due to cracks in or exfoliation of said cesium iodide film or an uneven surface of said cesium iodide film is substantially prevented.

4,195,231
COMBINED CYCLE ELECTRIC POWER PLANT HAVING AN IMPROVED DIGITAL/ANALOG HYBRID GAS TURBINE CONTROL SYSTEM

Terry J. Reed, North Huntingdon; Jack R. Smith, Pittsburgh, and Roy W. Kiscaden, Springfield, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,726
Int. Cl.[2] H02P 9/04
U.S. Cl. 290—40 R **8 Claims**



1. A combined cycle electric power plant comprising at least one gas turbine, means for generating steam in response to heat energy from said gas turbine, a steam turbine driven by steam supplied to it from said steam generating means, means for generating electric power under the driving power of said turbines, means for controlling the operation of said turbines and said steam generating means, said controlling means including a gas turbine control system having means for controlling the flow of fuel to said gas turbine, digital computer means for generating a fuel control signal during automatic gas turbine operation, a backup analog control for said gas turbine, means for transferring said controlling means between automatic and backup modes of operation, a digital/analog interface circuit for coupling said digital computer means for and said analog control to said fuel flow controlling means, said digital computer means including means for generating a speed control output and a megawatt load control output respectively during automatic speed and load modes of gas turbine operation, said digital computer means further including means for limiting the speed and load outputs to limit blade path temperature, means for generating the computer fuel control signal in response to said speed and load outputs, said analog control including a startup control which applies a fuel control signal to said interface circuit to control speed during startup and to control load during the load mode, a blade path temperature limit control coupled to the input of said interface circuit to hold or run back the fuel control signal output from said interface circuit for blade path temperature limiting and predetermined limit controls being connected between said gas turbine interface circuit and said fuel controlling means to limit the fuel control signal in both the automatic and manual gas turbine modes.

4,195,232
SELECTION ACKNOWLEDGEMENT SYSTEM FOR A LAUNDRY APPLIANCE

Roque D. Marcade, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

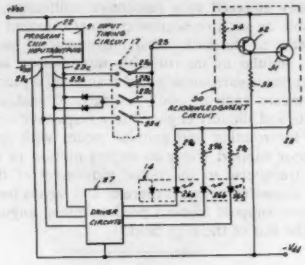
Filed Jan. 26, 1978, Ser. No. 872,603
Int. Cl.[2] G08B 1/08
U.S. Cl. 307—130 **14 Claims**

1. A selection acknowledgment system for a programmable laundry appliance having a plurality of user-selected functions and associated logic circuitry to implement said functions, said logic circuitry operating such that a delay of a fixed period exists between a time when a user selects and a time when said selected function is initiated by said appliance, said logic circuitry providing indication to the user that said selected function has been entered into the appliance program at the end of said fixed delay, said acknowledgment system comprising:

a plurality of function selection switches;

a plurality of normally on function indicator lights;

program circuit means for controlling functions during operation of the laundry appliance, said program circuit means including a plurality of control lines, at least some



of said control lines connecting both to a respective function selection switch and to a respective function indicator light; and

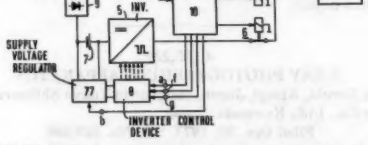
acknowledgment switching means connected to said function selection switches and function indicator lights for immediately extinguishing said function indicator lights when one of said function selection switches is operated by a user, thereby immediately informing the user that a selected function has been entered into said program circuit means.

4,195,233
INVERTER STARTING SYSTEM

János Udvardi-Lakos, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 27, 1978, Ser. No. 872,834
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706395
U.S. Cl. 307—66 **5 Claims**

U.S. Patent Mar. 25, 1980 Sheet 1 of 2



1. In an inverter adapted for alternating standby or load operation, which comprises a power section with controlled main valves and a control device with a control unit having an oscillator with a time determining capacitor for forming firing pulses and a monitoring device for a single or three phase network for generating a disturbance signal and forming a start command upon sensing a disturbance, the improvement comprising start control logic means coupled to be operative in standby operation, said start control logic having an input coupled to sense at least one parameter of the monitored network voltage and including a memory for storing said at least one parameter of the network voltage in the event of a disturbance and means to charge the time determining capacitor of said oscillator, in dependence on the value stored in said mem-

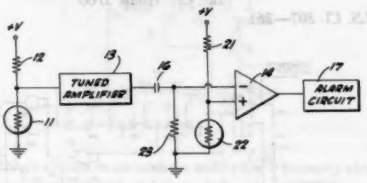
ory, to a voltage which will cause the control unit to deliver firing pulses to the control valves in the power section of the inverter, upon occurrence of the disturbance signal, in such a manner that the firing pulses supplied to said power section cause it to have an output voltage when it begins operating which corresponds to the stored parameter of the network voltage at the instant of the disturbance.

4,195,234

INFRARED INTRUSION ALARM SYSTEM WITH TEMPERATURE RESPONSIVE THRESHOLD LEVEL

Herbert L. Berman, Los Altos Hills, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Feb. 2, 1978, Ser. No. 874,380
Int. Cl.[2] H01J *39/00*; H01H *47/24*
U.S. Cl. 307—117 **8 Claims**



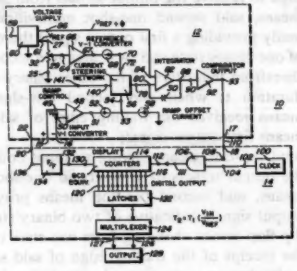
1. In a system for detecting the presence of an intruder in a protected area by a change in infrared energy from an ambient level to a threshold level: means including a sensing element for providing an electrical signal in response to a change in the infrared energy, means for providing a reference signal corresponding to the threshold level, means responsive to the electrical signal and the reference signal for delivering an output signal when the energy in the protected area reaches the threshold level, and means responsive to the ambient temperature in the protected area for adjusting the level of the reference signal to maintain a substantially constant sensitivity notwithstanding changes in the ambient temperature.

4,195,235

ANALOG-TO-DIGITAL CONVERTER SYSTEM

John A. Schoeff, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 570,908, Apr. 23, 1975, Pat. No. 4,092,726, which is a division of Ser. No. 370,519, Jun. 15, 1973, abandoned. This application Nov. 14, 1977, Ser. No. 851,250
Int. Cl.[2] H03K *1/14*; G08C *5/00*
U.S. Cl. 307—229 **6 Claims**



1. A circuit for processing a changing analog voltage for use in an electrical system providing a control signal, the circuit including in combination:

first voltage-to-current converter means having input terminals connected to receive the analog voltage and an output terminal, said first voltage-to-current converter means providing an analog current at said output terminal having a magnitude proportional to the magnitude of the changing analog voltage and a first direction;

current steering means having a first input terminal, a second input terminal connected to said output terminal of said first voltage-to-current converter means, a control terminal connected to receive the control signal, and an output terminal, said current steering means electrically connecting one of said first and second terminals to said output terminal thereof during the absence of the control signal, said current steering means being responsive to the control signal to connect the other of said first and said second terminals to said output terminal thereof; and

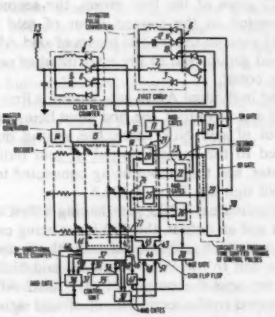
reference current means having a reference voltage amplifier with input and output terminals, voltage supply means for providing a reference voltage of substantially constant magnitude to one of said input terminals of said voltage reference amplifier, and second voltage-to-current converter means having a first terminal connected to said output terminal of said reference voltage amplifier and an output terminal coupled to said first input terminal of said current steering means, said second voltage-to-current converter means providing a reference current which has a substantially constant predetermined magnitude that is proportional to the magnitude of said reference voltage and a second direction.

4,195,236

DEVICE FOR DISCRETE CONTROL OF THYRISTOR-PULSE CONVERTERS

Anatoly Y. Kalinichenko; Viktor I. Kirillov; Aron A. Rabinovich; Vladimir V. Maleev, and Vagiz S. Sakaev, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia, Moscow, U.S.S.R.

Filed Mar. 23, 1978, Ser. No. 889,411
Int. Cl.[2] H03K *17/72*
U.S. Cl. 307—252 K **1 Claim**



1. A device for discrete control of thyristor-pulse converters, each converter comprising power thyristors, comprising:

a master pulse generator having an output;

a control unit having an add output and a subtract output;

a clock pulse counter having a complementing input, a control output and a plurality of logic outputs whose number is equal to twice the number of digits, the complementing input of said clock pulse counter being connected to the output of said master generator, and the control input being connected to the power thyristor of one of said thyristor-pulse converters;

a bidirectional pulse counter having an add input, a subtract input, a reset input receiving a signal resetting the bidirectional pulse counter, a setting input receiving a signal setting the bidirectional pulse counter to its final state, a

first output producing a signal at the first control phase, a second output producing a control start signal, a third output producing a signal indicative of the maximum pulse duration being attained, a fourth output producing a signal indicative of the state of the bidirectional pulse counter, corresponding to the maximum pulse duration of the output parameter of one of said thyristor-pulse converters, and a plurality of logic outputs whose number is equal to the number of logic outputs of said clock pulse counter and is equal to twice the number of digits, said bidirectional pulse counter being connected through said add input and said subtract input to the add output and the subtract output of said control unit, respectively;

a decoder matching the operation of said clock pulse counter and said bidirectional pulse counter, and having a plurality of inputs, a first output bus producing a signal determining the initial pulse duration, a second output bus producing a signal determining the penultimate value of the pulse duration, and a third output bus producing a signal determining the maximum pulse duration, said decoder being connected through said inputs to the logic outputs of said clock pulse counter and to the logic outputs of said bidirectional pulse counter;

a first individual AND gate having a first input, a second input and an output, and being connected through its first input to the control output of said clock pulse counter and connected through its output to said power thyristor of a second thyristor-pulse converter;

first and second groups of AND gates, the number of AND gates in each group being determined by the number of digits of said clock pulse counter and said bidirectional pulse counter and by the reuired control range of the output parameter of said thyristor-pulse converters, each AND gate of said groups having a first input, a second input and an output, said first input being connected to said first output bus of said decoder;

a NOT gate having an input and an output, said input being connected to the third output bus of said decoder;

a sign flip-flop having a first input, a second input, a first output and a second output, the first output of said sign flip-flop being connected to the second inputs of said AND gates of the first group, the second output being connected to the second input of said first individual AND gate, to the second inputs of said AND gates of the second group, and to the reset input of said bidirectional pulse count;

a second individual AND gate having a first input, a second input and an output, the first input being connected to the output of said NOT gate, the second input being connected to the second output of said bidirectional pulse counter, and the output being connected to the first input of said sign flip-flop;

a third individual AND gate having a first input, a second input and an output, the first input being connected to the add output of said control unit, the second input being connected to the third output of said bidirectional pulse counter, and the output of said third AND gate being connected to the second input of said sign flip-flop;

a fourth individual AND gate having a first input, a second input, a third input, and an output, the first input of said fourth AND gate being connected to the subtract output of said control unit, the second input being connected to the first output of said bidirectional pulse counter, the third input being connected to said fourth output of said bidirectional pulse counter, and the output being connected to the first input of said sign flip-flop and to the setting input of said bidirectional pulse counter; and

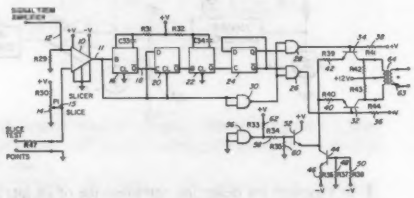
a circuit for passing the time-shifted trains of control pulses fed from the output buses of said decoder to the power thyristors of said thyristor-pulse converters, said circuit including at lease one OR gate, each OR gate of said circuit having inputs, the number of inputs being equal to the number of AND gates in said groups, each said OR gate of said circuit being connected through said inputs to the outputs of said AND gates of one of said groups and being connected through an output to said power thyristor of one of said thyristor-pulse converters.

4,195,237

UNIPOLAR TO BIPOLAR CONVERTER

George J. Meslener, Acton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 8, 1978, Ser. No. 904,108
Int. Cl.[2] H03K 5/00
U.S. Cl. 307—261 6 Claims



1. A unipolar to bipolar converter comprising:

a source of unipolar data pulses each having a pulse width in excess of a time duration t and of noise pulses each having a pulse width less than said time duration t;

first one-shot multivibrator means having an input coupled to said source, said means normally providing a first output signal therefrom indicative of one binary state and switching to a second output signal therefrom indicative of the other binary state for said time duration t when said means receives the leading edge of one of said pulses;

first flip-flop means having an input coupled to receive the output signals of said first one-shot multivibrator means, and being coupled to receive said pulses from said source, said flip-flop means providing a first output signal of one fixed binary state upon the simultaneous presence of one of said source pulses and said first one-shot multivibrator means one binary state output signal, said flip-flop means otherwise providing a second output signal of the opposite fixed binary state;

second one-shot multivibrator means having an input coupled to receive the output signals from said first flip-flop means, said second one-shot multivibrator means normally providing a first output signal therefrom indicative of one binary state and switching to a second output signal therefrom indicative of the other binary state for a time duration t_1 when said second one-shot multivibrator means receives the trailing edge of said first flip-flop means first output signal;

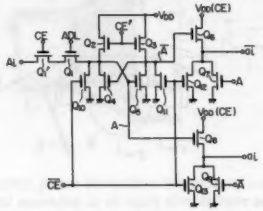
second flip-flop means having an input coupled to receive the output signals of said second one-shot multivibrator means, said second flip-flop means providing alternate output signals indicative of two binary state, said second flip-flop means changing from one state to another upon the receipt of the trailing edge of said second one-shot multivibrator means second output signal; and

means controlled by said second flip-flop means and said source for providing an output signal which corresponds to the alternate switching of the polarity of said source pulses dependent upon the state of said second flip-flop means alternate output signals.

4,195,238
ADDRESS BUFFER CIRCUIT IN SEMICONDUCTOR MEMORY

Takashi Sato, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Division of Ser. No. 692,367, Jun. 3, 1976, Pat. No. 4,074,148.
This application Jan. 3, 1978, Ser. No. 866,370
Claims priority, application Japan, Jun. 4, 1975, 50-66565
The portion of the term of this patent subsequent to Feb. 14, 1995, has been disclaimed.
Int. Cl.[2] H03K *3/286, 3/353;* G11C *8/00*
U.S. Cl. 307—270 11 Claims

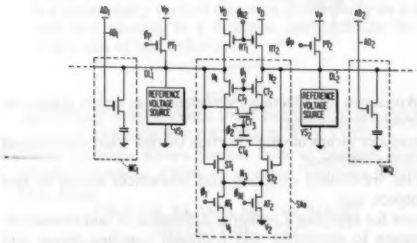


1. A driver circuit in an address buffer for a memory circuit comprising first, second, third, and fourth MISFETs, each having a source, a drain and a gate and in which the sources of said first and third MISFETs are respectively coupled to the drains of said second and fourth MISFETs for providing outputs of the buffer, characterized in that the gates of said first and third MISFETs are respectively coupled to complementary address input sources for providing complementary input signals, that the gates of said second and fourth MISFETs are cross-coupled to the drains thereof, and that output terminals are respectively connected to the drains of said second and fourth MISFETs, thereby causing one of complementary output signals appearing at either one of said output terminals in response to said complementary input signals to clamp to a potential provided to the source of said second and fourth MISFETs.

4,195,239
FLIP-FLOP COMPRISING TWO FIELD EFFECT TRANSISTORS CONTROLLABLY CONNECTED TO NODES OF THE FLIP-FLOP AND THEN CROSSWISE TO SERVE AS A SENSE AMPLIFIER

Shunichi Suzuki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 24, 1978, Ser. No. 909,086
Claims priority, application Japan, May 24, 1977, 52-60609
Int. Cl.[2] H03K *5/20, 3/286, 3/353;* G11C *7/06*
U.S. Cl. 307—355 7 Claims



1. A sense amplifier for use in combination with sources of a first and a second activation voltage, said sense amplifier having a first and a second node and an activation point and comprising:

precharge means for precharging said first and second nodes to a precharge voltage;

a first field effect transistor having an insulated gate connected to said first node, and a first of source and drain connected to said activation point;

a second field effect transistor having an insulated gate connected to said second node, and a first of source and drain connected to said activation point;

first control means between said first node and a second of the source and drain of said first field effect transistor for controllably electrically connecting and disconnecting said first node to and from said second of the source and drain of said first field effect transistor;

second control means between said second node and a second of the source and drain of said second field effect transistor for controllably electrically connecting and disconnecting said second node to and from said second of the source and drain of said second field effect transistor simultaneously with the connection and the disconnection effected by said first control means, respectively;

third control means between said first node and said second of the source and drain of said second field effect transistor for controllably electrically connecting said first node to said second of drain and source of said second field effect transistor in substantial coincidence with the disconnection effected by said first and said second control means;

fourth control means between said second node and said second of the source and drain of said first field effect transistor for controllably electrically connecting said second node to said second of drain and source of said first field effect transistor simultaneously with the connection effected by said third control means;

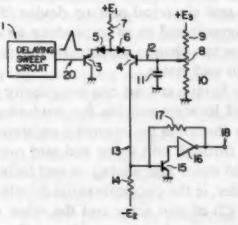
first activation means for electrically connecting and disconnecting said activation point to and from the source of said first activation voltage in substantial coincidence with the connection effected by said first and said second control means and simultaneously with the disconnection effected by said first and said second control means, respectively; and

second activation means for electrically connecting said activation point to the source of said second activation voltage after the disconnection effected by said first and said second control means, wherein said first activation voltage is higher than said second activation voltage by at least the higher threshold voltage between said first and second transistors and is lower than said precharge voltage by at least said higher threshold voltage.

4,195,240
VOLTAGE COMPARATOR CIRCUIT HAVING DEAD ZONE

Kiyoshi Otofuji, Kodaira, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Japan

Filed Nov. 9, 1977, Ser. No. 849,791
Claims priority, application Japan, Jun. 3, 1977, 52-64686
Int. Cl.[2] H03K *5/153*
U.S. Cl. 307—362 4 Claims



1. A voltage comparator circuit comprising:

a differential amplifier for receiving a changing input voltage which rises from a minimum voltage level and a predetermined reference voltage to produce at its output a signal corresponding to the difference between both said voltages; and

a dead zone forming circuit means including an emitter-grounded transistor whose base is connected directly to the output of said differential amplifier, a polarity inverting IC gate whose input is connected to the collector of said emitter-grounded transistor, and a resistor which positive-feeds back the output of said IC gate to the base of said emitter-grounded transistor, the resistance value of said resistor determining the width of the dead zone formed by the dead zone forming circuit, said IC gate producing an output signal after the time for which the level of said input voltage changes from its minimum voltage level to reach the level of said predetermined reference voltage.

4,195,241

CONTACTLESS CONTROL PULSE GENERATOR FOR ROTARY MACHINE TIMING

Heinz Müller, Stuttgart, and Joachim Hess, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1977, Ser. No. 833,030

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646887

Int. Cl.² H02K *19/20*

U.S. Cl. 310—168 **6 Claims**

1. A contactless control pulse generator for synchronizing electrically produced events with rotary movement in a machine, comprising, in combination:

a rotor (1) having at least its peripheral region made of magnetically conducting material,

a U-shaped stator (3) made of magnetically conducting material with its legs facing, adjacent to, and spaced by a gap from, the peripheral portion of said rotor (1), said stator being equipped with a magnet (4) and an electrical pick-up device (5) provided at different locations on said stator, said electrical pick-up device (5) of said stator (3) being constituted so as to produce an electrical signal in response to a change in magnetic flux in a magnetic circuit through said stator,

said rotor having at least one irregularity (2) of a configuration and location suitable for producing, as the rotor rotates, a change in the magnetic resistance of the magnetic circuit through said stator and said rotor, and

one of said stator legs having an end facing the rotor which is broader, in the circumferential direction, than said irregularity (2) of said rotor and the other of said stator legs presenting a peaked linear ridge to the air gap between it and the rotor, said linear ridge running substantially across the width of the periphery of the rotor.

4,195,242

BRUSH DEVICE

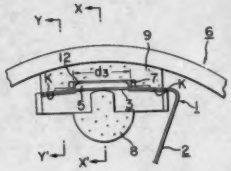
Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1977, Ser. No. 841,362

Claims priority, application Japan, Apr. 28, 1977, 52/54467[U]; May 27, 1977, 52/61927; Jun. 3, 1977, 52/72104[U]; Jul. 13, 1977, 52/93057[U]; Jul. 13, 1977, 52/93058[U]

Int. Cl.² H02K *13/00*

U.S. Cl. 310—239 **15 Claims**



1. A brush device integrally constructed with a commutator slide, a brush base extending from the commutator slide and a terminal portion extending from the brush base, the brush device being operatively supported when the brush base is inserted into a terminal insert hole having an inside wall surface, the terminal insert hole being provided on a motor case cover, characterized in that the brush device has a cut and raised piece on the brush base portion thereof, the cut and raised piece having a sharp burr on the edge of its tip on the side thereof contacting the inside wall surface of the terminal insert hole, and that the sharp burr provided on the tip of the cut and raised piece on the brush base contacts and cuts into the inside wall surface to secure the brush device in the terminal insert hole.

4,195,243

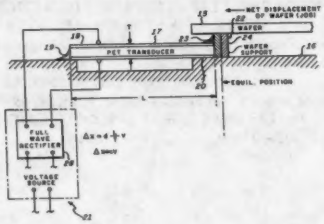
PIEZOELECTRIC WAFER MOVER

James B. Thaxter, Townsend, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,273

Int. Cl.² H01L *41/10*

U.S. Cl. 310—317 **7 Claims**



1. Apparatus for effecting movement of an object relative to a reference comprising:

transducer means having a portion thereof fixed with respect to the reference;

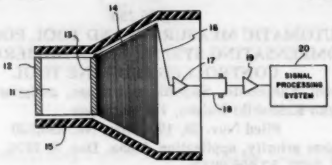
means frictionally coupling said transducer means to said object; and

means for applying a potential difference to said transducer means to accelerate said frictional coupling means and said transducer means, the potential difference being selectively capable of exceeding the critical acceleration of said object with respect to said frictional coupling means for effecting relative motion between said frictionally coupling means and said object.

4,195,244
CDS SOLID STATE PHASE INSENSITIVE ULTRASONIC TRANSDUCER

Joseph S. Heyman, Gloucester, Va., assignor to The United States of America a. represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 26, 1978, Ser. No. 928,130
Int. Cl.[2] H01L 41/18
U.S. Cl. 310—311 6 Claims

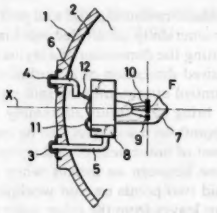


1. An ultrasonic phase insensitive transducer comprising:
a CdS crystal annealed in an inert atmosphere at a temperature and for a period of time to provide substantially maximum acoustic attenuation at the operating frequency of the crystal; and
first and second electrodes attached to said CdS crystal.

4,195,245
SEALED BEAM LAMP FOR AUTOMOBILE

Hideo Miyazawa, Mitaka, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,491
Claims priority, application Japan, Jun. 20, 1977, 52-80826[U]
Int. Cl.[2] H01J 5/16, 61/40; H01K 1/26, 1/30
U.S. Cl. 313—113 6 Claims



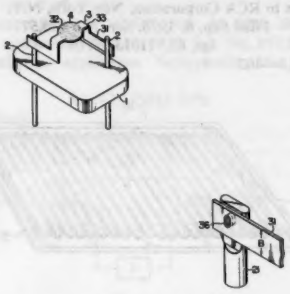
1. A sealed beam lamp for an automobile comprising:
a reflector having a rotary axis,
a halogen bulb mounted on said reflector, and
a plurality of filaments disposed in said halogen bulb, said plurality of filaments being arranged one above the other in a substantially vertical direction substantially on a common line running in a direction perpendicular to said rotary axis of said reflector.

4,195,246
SUPPORT STRUCTURE FOR DIRECTLY-HEATED CATHODE OF CATHODE RAY TUBE

Yukihiro Izumida; Kitaro Sasaki, both of Mobara, and Yoshinobu Miyamoto, Chiba, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 10, 1978, Ser. No. 949,403
Int. Cl.[2] H01J 1/15
U.S. Cl. 313—292 3 Claims

1. A support structure for a directly-heated cathode of a cathode ray tube, comprising a base of insulating material and support rods which pierce said base and is rigidly fixed to said base and to which strip leads of said cathode are fixed through resistance welding, wherein said support rods are provided in their predetermined positions with respective protrusions having top plane areas which are to be contacted with the surface of said strip leads, the length of said top plane area extending in

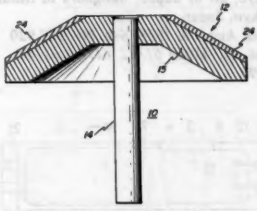


the direction of the width of said strip lead being 30–80% of the size of said width of said strip lead, and said strip leads are fixed to said support rods by welding said strip leads to said protrusions through resistance welding.

4,195,247
X-RAY TARGET WITH SUBSTRATE OF MOLYBDENUM ALLOY

Harold H. Hirsch, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,290
Int. Cl.[2] H01J 35/08
U.S. Cl. 313—330 9 Claims

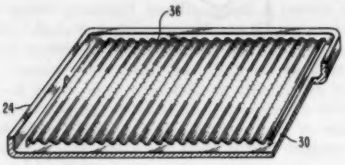


1. In a rotating X-ray target comprising a molybdenum-containing body and a tungsten-containing focal track supported thereon, the improvement wherein the molybdenum-containing body comprises molybdenum alloyed with at least one additive from the group consisting of iron, silicon cobalt, hafnium carbide, thorium oxide, zirconium oxide, titanium dioxide, aluminum oxide, magnesium oxide, silicon dioxide, yttrium oxide, and the rare earth metal oxides, wherein the content of molybdenum is at least about 90 percent by weight and the amounts of iron, silicon, cobalt or hafnium carbide, when present, fall in the following ranges:
iron—0.05 to 0.3 percent by weight,
silicon—0.05 to 0.3 percent by weight,
cobalt—0.05 to 0.3 percent by weight,
hafnium carbide—0.1 to 5 percent by weight of the molybdenum content,
the total additive content being in the range of from about 0.05 percent to about 10 percent by weight.

4,195,248
COLOR PICTURE TUBE HAVING IMPROVED CORRUGATED MASK

Ralph J. D'Amato, and Robert P. Stone, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,577
Int. Cl.[2] H01J *29/07*
U.S. Cl. 313—403 10 Claims



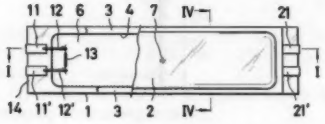
1. In an apertured mask type color picture tube having a faceplate, a cathodoluminescent screen on the faceplate, a corrugated apertured mask adjacent the screen and electron gun means for producing a plurality of electron beams and directing said beams through said mask to impinge upon said screen wherein the mask corrugations are substantially parallel and extend in a first direction with the corrugated waveform extending in a second direction, said mask including an aperture-to-aperture spacing variation in the second direction which is a function of mask-to-screen spacing, the improvement comprising:

the mask further including a variation in aperture-to-aperture spacing which increases with decreasing electron beam angle of incidence relative to said mask and decreases with increasing electron beam angle of incidence relative to said mask.

4,195,249
FLAT TYPE OF FLUORESCENT LAMP

Kazuo Ariga, Tokyo; Norimasa Oinuma, Machida, and Mitunari Yoshida, Tokyo, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 937,920
Int. Cl.[2] H01J *61/32, 61/36, 61/42*
U.S. Cl. 313—493 6 Claims



1. A flat fluorescent lamp comprising

first and second elongated shells, each shell having peripheral joint portions adapted to be sealed together, each of said first and second shells having depths substantially less than the distance between opposing joint portions;

means for sealing said peripheral joint portions of said elongated shells together so that said elongated shells form a sealed elongated hollow body;

at least two rigid plate-like surfaces projecting outwardly from respective opposite ends of said sealed elongated hollow body, said plate-like surfaces extending from one of said elongated shells;

at least two pairs of conductors, each pair extending from a respective one of said plate-like surfaces at said respective opposite ends of said elongated sealed hollow body to within said sealed hollow body;

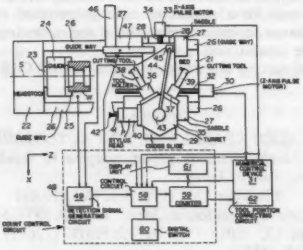
a discharge electrode supported by and electrically connected between the conductors of each pair of said conductors and being located within said sealed elongated hollow body and defining a substantially linear discharge path therebetween; and

at least two pairs of flat metallic strips, each pair of flat metallic strips being adhesively mounted on a respective one of said plate-like surfaces at respective ends of said sealed elongated hollow body and electrically connected to the respective conductors of the corresponding pair of said wires.

4,195,250
AUTOMATIC MEASURING AND TOOL POSITION COMPENSATING SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

Tamotsu Yamamoto, Sagamihara, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1977, Ser. No. 855,520
Claims priority, application Japan, Dec. 8, 1976, 51-147386; Jul. 8, 1977, 52-90538[U]
Int. Cl.[2] G05B *13/00*
U.S. Cl. 318—561 5 Claims



1. In an automatic measuring and tool position compensating method for a numerically controlled machine tool comprising the steps of putting the dimension of a stylus secured to a stylus head and a desired dimension of a workpiece to be machined into a count control circuit, moving said stylus under numerical control to bring said stylus alternately into contact with two opposite points on a workpiece to be measured, and measuring an amount of movement of said stylus head effected for a period of time between an instant when said stylus leaves from one of said two points on said workpiece and an instant when said stylus leaves from the other point of said workpiece by counting a train of pulses for measurement generated in a digital type measuring device to provide a measurement value, the improvement comprising additionally inputting said measurement value into said count control circuit for effecting the measurement of an actual dimension, the amount of deviation of the workpiece and the required compensation of the tip position of the relevant tool through a process of addition and substraction.

4,195,251
HIGH INTENSITY DISCHARGE LAMP HAVING SAFETY DEVICE WITH PYROPHORIC MATERIAL

William I. Bamberg, Medford, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jun. 22, 1978, Ser. No. 917,993
Int. Cl.[2] H01J *17/34*
U.S. Cl. 315—73 3 Claims

1. In a high intensity arc discharge lamp of the type having an arc tube within an outer envelope which contains either a vacuum or an inert gas, the improvement which comprises means to render the arc tube inoperative when the outer envelope is damaged sufficiently to admit air therewithin, said means comrpising a pyrophoric conductor electrically in series with the arc tube, said pyrophoric conductor being of the type

that will spontaneously ignite in the presence of air at a temperature somewhat above room temperature, said pyrophoric

conductor comprising a yarn of loosely wound filaments of a combustible metal coated with a powdered reaily ignitable material.

4,195,252

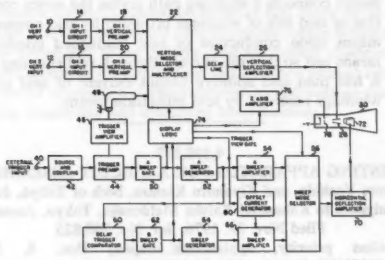
ZERO DELAY TRIGGER VIEW

Ronald W. Roberts, Cornelius, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 16, 1978, Ser. No. 961,437

Int. Cl.² G01R *13/28*

U.S. Cl. 315—392 **7 Claims**



1. In an oscillographic device having vertical and horizontal deflection systems, a circuit for providing an apparent time shift of a preselected waveform display, comprising:

a sweep generator for generating a sweep sawtooth signal the width of which is substantially coincident with the time interval of said waveform display;

means for generating a gate signal the gate width of which is substantially coincident with the time interval of said waveform display;

means coupled to said gate signal generating means for generating a predetermined offset current during the time interval that said gate signal is generated;

means for combining said sweep sawtooth signal and said offset current to produce a sawtooth voltage the level of which is shifted by a predetermined level; and

means for coupling said sawtooth voltage to said horizontal deflection system.

4,195,253

METHOD OF AGEING A GAS DISCHARGE LAMP

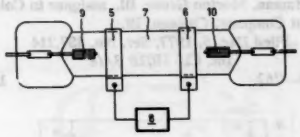
Peter C. Drop; Walter J. R. de Rop, and Robert L. M. E. Maes, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 745,957, Nov. 29, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,164

Claims priority, application Netherlands, Dec. 4, 1975, 7514124

Int. Cl.² H01J *9/44*

U.S. Cl. 316—1 **6 Claims**



1. A method for reducing the starting voltage in an arc discharge lamp which comprises: an arc discharge lamp providing lamp having a vacuum-tight sealed light-transmissive discharge vessel in which at least first and second electrodes are disposed and which contains a gas filling, and producing a high frequency glow discharge in said discharge vessel for a finite time interval.

4,195,254

CONTROL CIRCUIT FOR A D.C. MOTOR

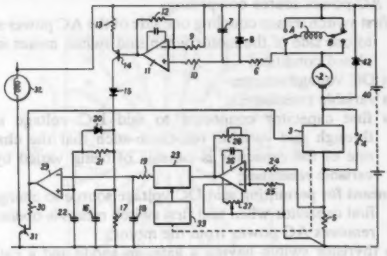
David Gurwicz, Gateshead, England, and Grant C. Melocik, Chardon, Ohio, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 14, 1978, Ser. No. 924,583

Claims priority, application United Kingdom, Aug. 3, 1977, 32576/77

Int. Cl.² H02P *5/10*

U.S. Cl. 318—334 **5 Claims**



1. A circuit for controlling the temperature of a d.c. motor having an armature and a field winding, comprising:

a chopper control circuit connected in series with the field winding and armature;

voltage sensing means for sensing the resistive voltage drop across the field winding due to current flow in the winding;

current sensing means for sensing current in the field winding, said current sensing means including means for deriving a voltage proportional to said current having a current shunt connected in series with the chopper control circuit;

comparing means for comparing the sensed voltage across the field winding with the voltage proportional to said current and providing an output signal when the comparison indicates that the temperature of the field winding exceeds a predetermined level; and

a sample and hold circuit operable to sense and retain a voltage proportional to the voltage across the current

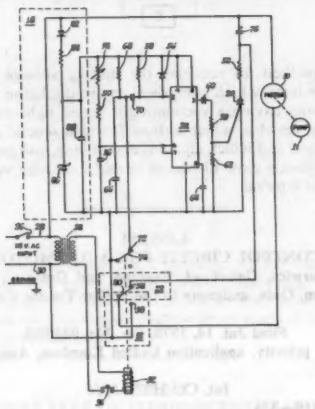
shunt during each "on" period of the chopper control circuit and to supply the retained voltage to the comparing means, the output from the comparing means limiting the mark-space ratio of the chopper control circuit and controlling the armature current, the chopper control circuit reducing the armature current of the motor in response to receiving the output signal from the comparing means.

4,195,255

ELECTRONIC BRAKE FOR AC MOTORS

Emil J. Guttmann, Morton Grove, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Dec. 5, 1977, Ser. No. 857,214
Int. Cl.² H02P 3/18
U.S. Cl. 318—762 **12 Claims**



1. A circuit for electronically braking a motor operated by an AC power source comprising:

first switch means coupling one side of the AC power source to one side of the motor when said switch means is in its closed condition;

a DC voltage source;

a variable resistance;

a first capacitor connected to said DC voltage source through said variable resistance such that the charging rate of the capacitor is capable of being varied by said variable resistance;

means for permitting said DC voltage source to charge said first capacitor when said first switch means is opened and removes AC power from the motor;

a thyristor switch having a gate, an anode and a cathode, said cathode being connected to the one side of the AC power source;

a resistor connected by one end to said anode;

second switch means for coupling the other end of said resistor to the one side of said motor when said first switch means is in its opened condition, the other side of said motor being connected to the other side of the AC power source; and

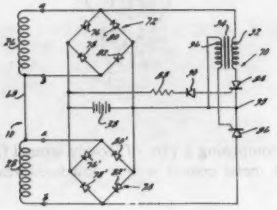
control means having an output coupled to the gate for applying a constant DC voltage to said gate for turning on the thyristor swtich when said first switch means is in its opened condition and having an input connected to said first capacitor for comparing the voltage level across the first capacitor with a predetermined voltage level, and for removing the DC voltage from the gate to enable the thyristor switch to turn off after a timed interval defined by when the voltage across the first capacitor reaches the predetermined level so that the timed interval is a function of the variable resistance.

4,195,256

ALTERNATOR WITH PARALLEL WINDINGS AND REGULATOR THEREFOR

Thomas F. Carmichael, Ortonville, Mich., assignor to Syncro Corporation, Troy, Mich.

Filed Oct. 25, 1977, Ser. No. 845,360
Int. Cl.² H02J 7/14
U.S. Cl. 322—90 **9 Claims**



1. For a permanent magnet alternator having a rotor with a plurality of permanent magnet poles for providing a magnetic field, a stator with a plurality of poles cooperating with said plurality of permanent magnet poles, and winding means for said stator comprising at least two sets of windings connected in parallel so that the rotation of said rotor relative to said stator provides a magnetic field-induced current in each of said sets of windings, and utilization means connected to said windings for receiving the additive output current of said sets of windings, a regulating circuit comprising:

detecting means for detecting a predetermined electrical condition; and

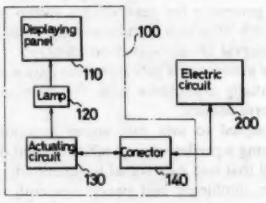
circuit means including controlled conduction means associated with said detecting means for conducting in response to said predetermined electrical condition, said circuit means further including connecting means connected to said controlled conduction means and connecting said sets of windings in series so that said controlled conduction means connects a shunting path across the series connection of said sets of windings provided by said connecting means upon conduction of said controlled conduction means and so that the current through said shunting path is less than said additive output current of said sets of windings received by said utilization means.

4,195,257

TESTING APPARATUS FOR A CIRCUIT ASSEMBLY

Susumu Yoshida, and Kiyomitu Kimura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Nov. 29, 1976, Ser. No. 745,823
Claims priority, application Japan, Dec. 4, 1975, 50/165135[U]; Feb. 5, 1976, 51/12045
Int. Cl.² G01R 15/12
U.S. Cl. 324—73 R **6 Claims**



1. A testing apparatus for testing a control system for controlling an electrically driven vehicle and having a main circuit which includes a battery having positive and negative termi-

nals, an electric motor connected in series to the battery and a chopper circuit which is connected between the motor and the battery for regulating a voltage applied to the electric motor from the battery and a control circuit having relays, logic units including monitor circuits for monitoring the condition of the chopper circuit, and the control circuit and the chopper circuit being divided into a circuit element unit which includes capacitors and reactors and a semiconductor element unit which includes semiconductor elements on an electrical insulating board having a connector member with sockets for electrically connecting the logic units to the circuit elements of the control system, said testing apparatus comprising a displaying panel which includes a drawing of a circuit assembly of the control system to be tested, an indicating lamp member having indicating lamps which are positioned at a portion of said drawing of said circuit assembly, an actuating circuit member for energizing said indicating lamp member, and a connecting member which includes a first connector means having a plurality of terminals for connecting said logic units which are extracted from said sockets of said connector member to said actuating circuit member and a second connector means to be connected to said connector member from which said logic units logic units are extracted from said sockets and for electrically connecting the circuit assembly to be tested to said actuating circuit member and to said logic units first, second and third terminals of said first connector means being connected to the terminals of the battery of the main circuit, said actuating circuit member comprising:

a voltage detecting means electrically connected to said lamp member and a corresponding test point of the control system to be tested by way of said first connector member, for illuminating said lamp member by detecting the potential of said corresponding point, and a voltage setting circuit which comprises a controllably variable constant voltage setting circuit means for applying constant voltage to said lamp member and said voltage detecting member, said constant voltage means including a zener diode connected in parallel to said lamp member and said voltage detecting means, a plurality of series connected resistor elements connected between said zener diode and said first terminal of said first connector means which is to be connected to the battery, and an voltage changeover circuit means for controlling said constant voltage setting circuit to supply a constant current to said voltage detecting means and said indicating lamp member.

4,195,258

LOGIC ANALYZER FOR INTEGRATED CIRCUITS, MICROCOMPUTERS, AND THE LIKE

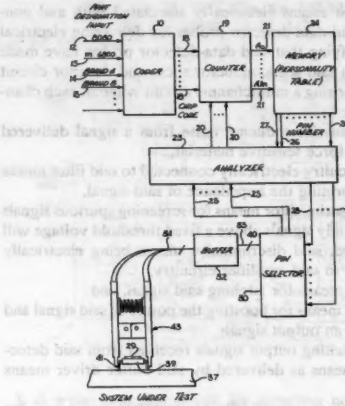
Yao T. Yen, Cupertino, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1977, Ser. No. 773,435
Int. Cl.[2] G01R *15/12*
U.S. Cl. 324—73 AT **12 Claims**

1. In an apparatus for testing or analyzing a plurality of circuits where each of said circuits includes a single connector means and where predetermined signal paths of said circuits are coupled to different contacts of said single connector means, a improvement for selecting said predetermined signal paths comprising;

memory means for storing data for each of said circuits representative of said coupling between said predetermined signal paths of said circuits and said different contacts; and

selection means, coupled to said memory means and said contacts of said connector means, for selecting said predetermined signal paths as a function of said data stored in said memory;



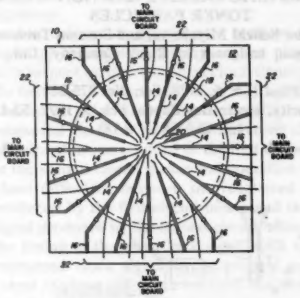
whereby predetermined signal for each of said circuits may be selected for testing or analyzing without requiring the manual unscrambling of probes.

4,195,259

MULTIPROBE TEST SYSTEM AND METHOD OF USING SAME

Lee R. Reid, Plano, and Charles R. Ratliff, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 4, 1978, Ser. No. 893,118
Int. Cl.[2] G01R *1/06, 31/02*
U.S. Cl. 324—158 P **7 Claims**



1. A multiprobe test system for testing microcircuits comprising:

moveable support means for locating a semiconductor slice having a plurality of integrated circuits thereon;

electrical support means located in parallel spaced relation to said moveable support means;

a plurality of data-detector probes electrically connected to said electrical support means for detecting the surface of said semiconductor slice, each of said data-detector probes including:

a support body,

an arm connected to said support body and extending therefrom in an angular fashion,

a probe tip having an angular point connected to said arm and extending therefrom, and

sensing means comprising a force sensitive material bonded

to said arm for sensing when said probe tip makes contact with said semiconductor slice and generating a signal indicative thereof;

detector circuit means electrically associated with and connected to said data-detector probes for delivering electrical signals signifying that said data-detector probes have made contact with said semiconductor slice, said detector circuit means comprising a multichannel circuit wherein each channel includes:

filtering means for reducing noise from a signal delivered from said force sensitive material,

amplifier circuitry electrically connected to said filter means for transforming the impedance of said signal,

electronic discriminator means for screening spurious signals such that only signals above a fixed threshold voltage will be detected, said discriminator means being electrically connected to said amplifier circuitry,

latch circuit means for latching said signal, and

buffer driver means for boosting the power of said signal and delivering an output signal;

means for evaluating output signals received from said detector circuit means as delivered by said buffer driver means thereof; and

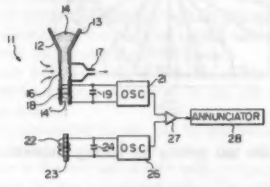
system output means electrically connected to said means for evaluating and operatively associated therewith for displaying said detector circuit means signals.

4,195,260

APPARATUS FOR SENSING DETERIORATION OF DEVELOPING SUBSTANCE INCLUDING FERROMAGNETIC CARRIER AND NON-MAGNETIC TONER PARTICLES

Koji Sakamoto; Seiichi Miyakawa, and Susumu Tatsumi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 6, 1978, Ser. No. 875,345
Claims priority, application Japan, Feb. 9, 1977, 52-13884
Int. Cl.[2] G01N *9/00*
U.S. Cl. 324—204 **28 Claims**



2. An apparatus for sensing deterioration of a developing substance which includes ferromagnetic carrier particles and non-magnetic toner particles, the apparatus comprising:

first means for applying a predetermined force to the developing substance for readily removing substantially all of the toner particles therefrom except for spent toner particles which are strongly adhered to the carrier particles;

second means for measuring the toner density of the remaining developing substance after removal of the toner particles therefrom; and

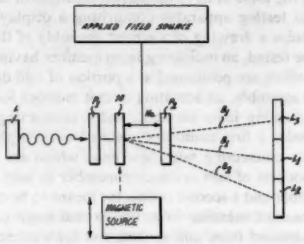
third means for providing a reference toner density for comparison with the measured toner density.

4,195,261

METHOD AND APPARATUS FOR MEASURING THE STRIPE WIDTH AND COLLAPSE FIELD OF MAGNETIC MATERIALS

Robert L. Zwingman, Poway, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 825,533, Aug. 18, 1977, abandoned.
This application Sep. 29, 1978, Ser. No. 947,257
Int. Cl.[2] G01R *33/00*
U.S. Cl. 324—210 **7 Claims**



1. A method for measuring certain parameters of a thin film magnetic material having stripe domains thereon especially adaptable for magnetic bubble memories, comprising the steps of:

subjecting the thin film magnetic material to a magnetic field to align the stripe domains in parallel,

removing the magnetic field used to align the stripe domains while maintaining the magnetic field necessary to maintain the domains in stripe form and subjecting the parallel magnetic stripe domains to a source of polarized light to form a first and second order of diffracted beams of light,

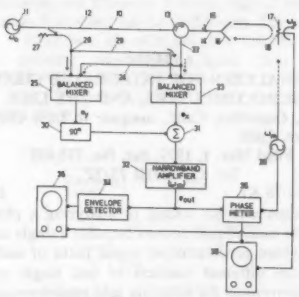
measuring the intensity of the first order of diffracted beam of light and the angle of diffraction of said first order beam of light to determine stripe width.

4,195,262

APPARATUS FOR MEASURING MICROWAVE ELECTROMAGNETIC FIELDS

Ray J. King, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 6, 1978, Ser. No. 958,189
Int. Cl.[2] G01S *1/44*; H04B *17/00*
U.S. Cl. 455—67 **21 Claims**



1. Apparatus for measuring the microwave field radiated from an antenna, comprising:

(a) a microwave source;

(b) a transmitting antenna for radiating microwaves from said source and for receiving microwave radiation;

(c) a scattering electric field probe positionable in the radi-

ated field of said transmitting antenna to receive microwave radiation therefrom and re-radiate a microwave signal back to said antenna, said field probe comprising:

(1) a scattering antenna selectively responsive to the electric field component of the radiated microwave field,

(2) a modulatable impedance electrically connected in said scattering antenna,

(3) means for modulating said impedance at a frequency substantially less than the frequency of said microwave source,

(4) means for spinning said scattering antenna about an axis of rotation at an angular frequency substantially less than the frequency of modulation of said impedance;

(d) phase insensitive means for receiving a signal from said microwave source and the microwave signal from said scattering probe received by said transmitting antenna, and for combining and demodulating the signals to yield an output signal at the frequency at which said scattering antenna impedance is modulated and phase shifted proportional to the phase shift of the microwave signal received by said transmitting antenna, and with a magnitude which is independent of such phase shift and a function of the magnitude of the electric field received by said scattering antenna; and

(e) means for comparing a signal at a frequency coherent with the frequency of spinning of said scattering antenna with the output signal from said phase insensitive means, to thereby allow measurement of the relative tilt angle of the major axis of the microwave electric field received by said scattering antenna.

4,195,263

SELECTIVE CALL RADIO COMMUNICATION RECEIVER

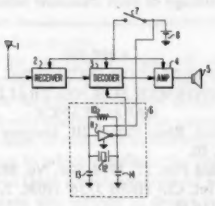
Masaru Masaki, and Akio Yotsutani, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,744

Claims priority, application Japan, Oct. 29, 1976, 51-146416[U]

Int. Cl.[2] H04B 1/06

U.S. Cl. 455—343 **1 Claim**



1. A selective call radio communication receiver of the type including a radio receiver circuit adapted to demodulate the radio frequency selecting signal received, a decoder circuit for decoding the demodulated selecting signal, a crystal oscillator circuit connected to the decoder circuit for producing different timing functions, and a battery, the improvement comprising:

connection means directly and continuously connecting at least said crystal oscillator circuit with said battery; and

switch means for selectively connecting the radio receiver circuit with said battery, said switch means being switchable between a first position in which said receiver is inoperable and a second position in which said receiver is operable, said crystal oscillator circuit being energized at all times regardless of the position of said switch means.

4,195,264

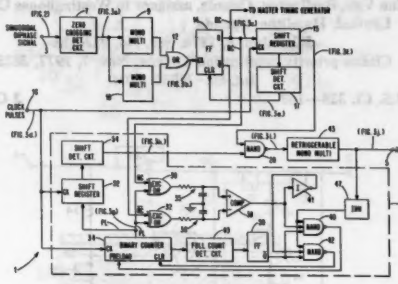
NOISE DETECTION CIRCUIT

Charles R. Marchetti, Wellesley, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 26, 1978, Ser. No. 899,923

Int. Cl.[2] H03K 13/32, 5/20

U.S. Cl. 328—134 **11 Claims**



1. A noise detection circuit for detecting noise associated with a binary encoded signal and for producing an alarm signal in response to the detection of such noise, said noise detection circuit comprising:

first circuit means operative to receive said binary encoded signal and to derive a recovered clock signal therefrom comprising a train of recovered clock pulses of fixed duration and further operative to derive a gate signal comprising a train of gate pulses each corresponding to a different one of the recovered clock pulses of the recovered clock signal;

alarm gate means having a first input, a second input, and an output, each of the gate pulses produced by the first circuit means being applied to the first input of the alarm gate means;

phase lock loop circuit means coupled to the first circuit means and to the second input of the alarm gate means and comprising:

second circuit means operative to produce a phase lock signal of the same frequency as, but phase displaced with respect to, the recovered clock signal produced by the first circuit means, said phase lock signal comprising a series of pulses phase displaced with respect to the recovered clock pulses of the recovered clock signal;

phase circuit means coupled to the first circuit means and to the second circuit means and operative to detect the phase difference between the recovered clock signal produced by the first circuit means and the phase lock signal produced by the second circuit means and to alter the timing of the phase lock signal with respect to the recovered clock signal by an amount related to the extent of phase difference between the recovered clock signal and the phase lock signal; and

third circuit means coupled to the second circuit means and to the second input of the alarm gate means and operative to receive the phase lock signal from the second circuit means and to derive therefrom an alarm gate signal comprising a series of gate pulses phase displaced with respect to the pulses of the phase lock signal, the pulses of said alarm gate signal being applied to the second input of the alarm gate means;

said alarm gate means being operative when gate pulses are applied to the first and second inputs having a predetermined first relationship to each other to produce an alarm signal at its output indicating that the binary encoded signal has noise associated therewith, and operative when gate pulses are applied to the first and second inputs having a predetermined second relationship to each other to

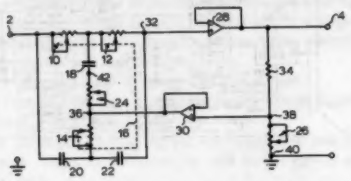
produce a second signal at its output indicating the absence of noise associated with the binary encoded signal.

4,195,265

VARIABLE RESPONSE NOTCH FILTER FOR MACHINE RESONANCE ELIMINATION IN A SERVO CONTROL SYSTEM

Enn Vali, Burlington, Canada, assignor to Westinghouse Canada Limited, Hamilton, Canada

Filed Jun. 8, 1978, Ser. No. 913,526
Claims priority, application Canada, Nov. 7, 1977, 282504
Int. Cl.[2] H03B *1/04*
U.S. Cl. 328—167 **3 Claims**



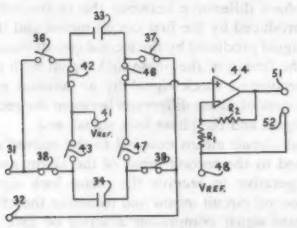
1. A servo system including an improved twin-T notch filter, said system including control signals for controlling the motion of a mechanical apparatus, said apparatus having a band of natural resonating frequencies, the notch filter receiving the control signals at input terminals and permitting the passage of the control signals therethrough to output terminals operably connected to the apparatus, said notch filter substantially eliminating any component of the control signals substantially equal in frequency to said natural resonating frequencies, said notch filter comprising means for feeding back an in-phase amount of the control signal from the output terminals to the base of the twin-T filter, said means including a control means for regulating the amount of control signal fedback thereby adjusting the notch width to an effective minimum and thereby minimizing phase delay effects on the frequency components of said signal in close proximity to but less than said natural resonating frequencies.

4,195,266

COMMUTATING SIGNAL LEVEL TRANSLATOR

David Bingham, Los Altos, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Filed Jun. 1, 1978, Ser. No. 911,496
Int. Cl.[2] H03F *1/02*
U.S. Cl. 330—9 **10 Claims**



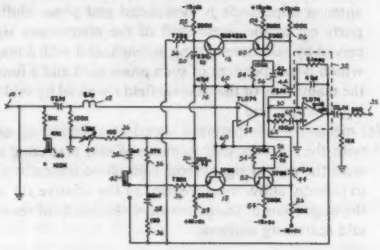
1. A commutating signal level translator system comprising:
a pair of input terminals adapted to have a differential voltage impressed thereacross,
an amplifier having first and second inputs and an output,
first and second capacitors,
a reference voltage terminal,
switching means connected to said capacitors for connecting said first capacitor across said input terminals and said second capacitor between said reference voltage terminal and said first amplifier input and reversing said capacitor connections,
a resistor network connecting said second amplifier input to said reference voltage terminal and to said amplifier output, and
first and second output terminals with said first output terminal connected to said amplifier output and said second output terminal connected to said reference voltage terminal.

4,195,267

LOW-LEVEL PREAMPLIFIER CIRCUIT

Gerald R. Stanley, Mishawaka, Ind., assignor to Crown International, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 874,040, Feb. 1, 1978, Pat. No. 4,158,820. This application Nov. 6, 1978, Ser. No. 957,682
Int. Cl.[2] H03F *1/26, 1/183*
U.S. Cl. 330—265 **5 Claims**



1. A low-level preamplifier circuit for an audio input comprising an NPN bipolar transistor, a PNP bipolar transistor, an operational amplifier, the bases of said transistors connected in AC common for receiving the audio input, an AC common connection between said transistor emitters, means for providing a negative voltage feedback at said AC common connection for said transistor emitters, the collectors of said transistors being connected in a summing mode to the input terminal of said operational amplifier, whereby RFI input into said transistor bases generates complementary cancelling distortion in said transistor collectors, and means for holding the collector to emitter voltage of each transistor substantially constant.

4,195,268

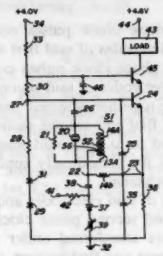
CRYSTAL OSCILLATOR INCLUDING ADJUSTABLE AUTO TRANSFORMER FOR NEUTRALIZING CRYSTAL CAPACITANCE

Sviataslov Zarkov, River Forest, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1978, Ser. No. 882,204
Int. Cl.[2] H03B *5/36*; H03C *3/22*
U.S. Cl. 331—116 R **3 Claims**

1. In a variable, high frequency crystal oscillator including an electronic tank circuit comprising a crystal and a pair of capacitors connected in series and coupled to said crystal, said crystal having a physical capacitance, C_p; first and second inductance means; means for coupling the first and second inductance means into the tank circuit for neutralizing the physical capacitance, C_p, of the crystal and for providing an impedance transformation between the crystal and the remainder of the tank circuit; and impedance varying means coupled into the tank circuit for varying the frequency of oscillation thereof, the improvement comprising:
an auto transformer having said first and second inductance means as windings thereof with a tap at their juncture, said first and second inductance means being disposed end to end on a common form, and a movable metallic slug

having linear dimensions less that the linear dimensions of said inductance means disposed inside of said form, said metallic slug being movable between the extremities of



said inductance means, the extremities of said inductance means being coupled across said crystal and the tap and the extremity of one of said inductance means being coupled into said tank circuit.

4,195,269

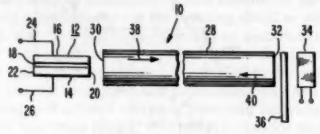
TWO-WAY SINGLE FIBER OPTICAL COMMUNICATION SYSTEM

Michael Ettenberg, Freehold, and Henry Kressel, Elizabeth, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,808

Int. Cl.[2] H04B *9/50*; H01S *3/10*

U.S. Cl. 332—7.51 **6 Claims**



1. A two way optical communication system comprising:

(a) first means for providing a beam of modulated optical radiation,

(b) second means for detecting the modulated optical radiation from said first means,

(c) third means for carrying said beam of optical radiation from said first means to said second means,

(d) fourth means between the second means and the third means periodically operable between a condition in which it allows the beam of radiation to reach the second means and a condition in which it reflects the beam of radiation back along said third means toward said first means, and

(e) said first means also serving to detect the radiation reflected back along said third means.

4,195,270

DIELECTRIC SLAB POLARIZER

Lawrence L. Rainwater, Salt Lake City, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,327

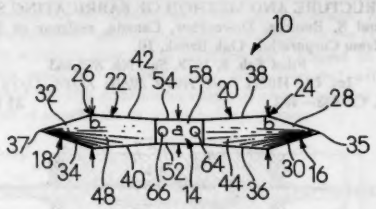
Int. Cl.[2] H01P *1/16*

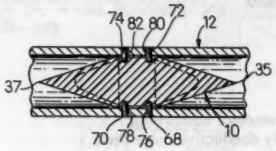
U.S. Cl. 333—21 A **7 Claims**

1. In a waveguide section, an improved dielectric slab polarizer for providing an approximate ninety degree differential phase shift transformation of RF field polarization, comprised by:

a rectangular polyhedron middle section;

a pair of conical opposite end sections tapered to converge away from said middle section and spaced along the axis of said waveguide section; and





a pair of intermediate sections convergently tapered toward said middle section which merge with said middle section and said opposite end sections.

4,195,271

BROAD-BAND 180° PHASE SHIFTER

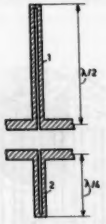
Burkhard Schiek, and Jürgen Köhler, both of Halstenbek, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,440

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653676

Int. Cl.[2] H01P *3/08, 1/18, 9/00*

U.S. Cl. 333—161 **4 Claims**



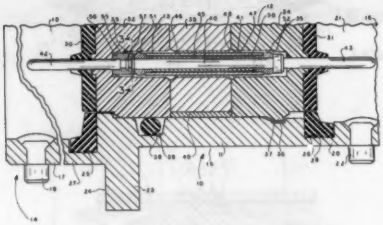
1. A 180° phase shifter for use in planar microwave circuits such as microstrip, microslot, striplines and the like, said phase shifter comprising a first transmission line having a λ/2 long meander formed by a pair of coupled lines connected at one end and a reference transmission line having a λ/4 long meander formed by a pair of coupled lines connected at one end disposed opposite said λ/2 long meander so that the phase of a signal applied to said first transmission line is shifted by approximately 180° with respect to the phase of a signal applied to said reference transmission line.

4,195,272

FILTER CONNECTOR HAVING CONTACT STRAIN RELIEF MEANS AND AN IMPROVED GROUND PLATE STRUCTURE AND METHOD OF FABRICATING SAME

Kamal S. Boutros, Downsview, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 6, 1978, Ser. No. 875,363
Int. Cl.[2] H03H 7/04; H01R 19/10, 13/66, 17/16
U.S. Cl. 333—182 31 Claims



1. A filter connector comprising:

an electrically conductive outer shell;

an inner body within said shell including a ground plate electrically coupled to said shell, a longitudinally extending channel, and retention means disposed within said channel; and

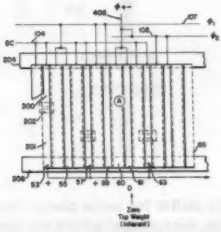
a filtered contact assembly disposed at least partially within said chamber including a contact member, filter means electrically coupled to and mounted in a fixed axial position on said contact member, said filter means also including a ground electrode electrically coupled to said ground plate with conductive adhesive material, locking means, carried by said contact member for engaging said retention member to maintain said filtered contact assembly in a fixed axial position relative to said inner body, and a resilient sleeve disposed between said locking means and said filter means for providing axial stress isolation between said filter means and said contact member.

4,195,273

CTD CHARGE SUBTRACTION TRANSVERSAL FILTER

Paul R. Prince, Fountain Valley, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 29, 1976, Ser. No. 737,114
Int. Cl.[2] H03H 7/28; G11C 19/28, 27/02; H01L 29/78
U.S. Cl. 333—165 9 Claims



1. A charge transfer transversal filter adapted for responding to input signal charges, comprising:

a substrate;

at least one first section and at least one second opposite polarity section disposed on said substrate, each of said sections having at least one group of electrodes along said substrate with each group providing a time delay and including charge transfer electrodes and a sensing electrode, said first and second section having a crossover area along said substrate between opposite polarity sections;

a set of electrodes disposed across said crossover area for providing a fraction or more of said time delay to the signal charges;

a source of first phase clock pulses coupled to selected charge transfer electrodes of said first section;

a source of second phase clock pulses coupled to selected charge transfer electrodes of said second section;

means for coupling together selected ones of said sensing electrodes of said first and second sections;

reset means, coupled to at least said selected ones of said sensing electrodes for periodically applying a reset voltage thereto; and wherein

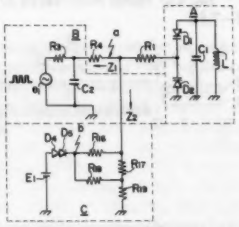
the relative location of said electrodes and the relative timing of said first and second phase clock pulses are such that as charges are transferred under the sensing electrodes of said at least one first section, charges are transferred out from under the sensing electrodes of said at least one second section.

4,195,274

TEMPERATURE COMPENSATING CIRCUIT FOR VARACTOR DIODES

Hisashi Suganuma, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 1, 1978, Ser. No. 930,115
Claims priority, application Japan, Aug. 1, 1977, 52/81554
Int. Cl.[2] H01V 3/00; H03K 3/26; H03H 5/12
U.S. Cl. 334—15 6 Claims



1. A temperature compensating circuit for a tuning circuit having a varactor diode, comprising:

(a) a varactor diode having an anode and a cathode and exhibiting a negative temperature coefficient, said varactor diode being responsive to a control voltage applied to its cathode for producing a capacitance value in accordance with the value of said control voltage;

(b) temperature compensating means for providing a biasing voltage to the anode of said varactor diode, said biasing voltage having an amplitude level controlled to compensate substantially for the temperature sensitivity of said varactor diode, said temperature compensating means including a constant voltage source having positive and negative terminals, a first resistor and a temperature compensating diode having an anode and a cathode and exhibiting a negative temperature coefficient, said negative terminal and the cathode of said temperature compensating diode being connected to ground and said biasing voltage provided by said temperature compensating means being present at the anode of said temperature compensating diode, said negative temperature coefficient of said temperature compensating diode being substantially equal to the negative temperature coefficient of said varactor diode, said first resistor being connected between said positive terminal and the anode of said temperature compensating diode; and

(c) a second resistor connected between the anode of said temperature compensating diode and the anode of said

varactor diode for coupling the biasing voltage to the anode of said varactor diode, said second resistor having a resistance value high enough to prevent said temperature compensating means from interfering with the tuning operation of said tuning circuit.

4,195,275

MULTIPLE ELECTROMAGNETIC RELAY

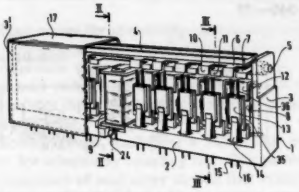
Henri Kraess, and Paul Bloch, both of Strasbourg, France, assignors to Societe Anonyme dite: La Telephonie Industrielle et Commerciale - Telic, Strasbourg, France

Filed Oct. 6, 1978, Ser. No. 949,360

Claims priority, application France, Nov. 8, 1977, 77 33544

Int. Cl.² H01H *1/52, 9/20*

U.S. Cl. 335—120 **7 Claims**



1. A multiple electromagnetic relay comprising on a support, a control relay, a plurality of individual relays and a common bar made of insulative material, said common bar being situated above said control relay and above said individual relays and including a conductor bar, said individual relays each having at least one moving contact integral with an armature and one fixed contact connected to said conductor bar, means for mounting said common bar for pivoting about an axis under the control of the control relay, whereby an electrical circuit is completed between a moving contact and a fixed contact of one of the individual relays and is established by energizing firstly said control relay then said individual relay and then by de-energizing said control relay and then said individual relay, and wherein said relay further comprises means for mechanical locking of the moving contact by the fixed contact, such that unlocking is obtained and the electrical circuit is broken by momentarily energizing the control relay.

4,195,276

ELECTROMAGNETIC RELAY AND METHOD FOR ITS ADJUSTMENT

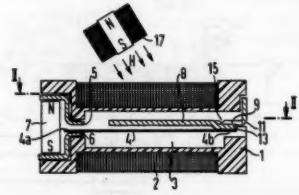
Ulf Rauterberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 868,980

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1977, 2701230

Int. Cl.² H01H *51/27*

U.S. Cl. 335—151 **14 Claims**



1. In an electromagnetic relay having a switching element mounted within the relay and resiliently movable therein having a free end which cooperates with at least one other component of the relay to provide a switching effect and an attachment end, the improvement of the switching element having its attachment end mounted to an elongated ferromagnetic adjustment plate, the switching element being resiliently movable with respect to the adjustment plate, the adjustment plate having a clamping joint of attachment to a body of the relay, and the adjusting plate being bendable with respect to the clamping point, the adjusting plate being provided with a theoretical bending point intermediate its clamping point and the point of attachment of the switching element.

4,195,277

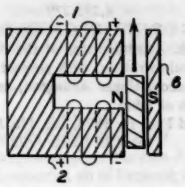
MOVING PERMANENT MAGNET LIMITED MOTION ACTUATOR

John R. Leicht, Bedford, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1978, Ser. No. 918,987

Int. Cl.² H01F *7/08*

U.S. Cl. 335—229 **5 Claims**



1. An electromagnetic actuator mechanism comprising at least two electromagnetic poles of opposite polarity, an armature comprising a permanent magnet positioned within the field of magnetic influence of said at least two electromagnetic poles, the actuator mechanism being characterized in that said armature is adapted to move in a direction perpendicular to said magnetic field.

4,195,278

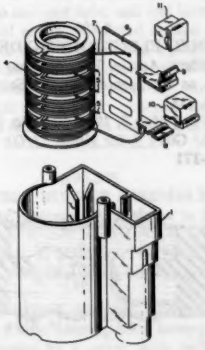
HIGH VOLTAGE TERMINAL STRUCTURE AND FLYBACK TRANSFORMER

Richard F. Doyle, Corfu, and Edward T. Myers, Tonawanda, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 15, 1979, Ser. No. 3,166

Int. Cl.² H01F *27/04*

U.S. Cl. 336—90 **2 Claims**



1. A combination comprising a high voltage terminal, a television receiver high voltage circuit, said circuit including a

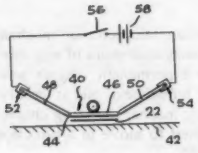
secondary winding of a flyback transformer enclosed in a resin-filled, non-conductive container characterized by a conducting tab electrically coupled to a high voltage end of said secondary winding; said tab located inside said container to have a first tab surface positioned substantially parallel to an exterior surface of said container; a non-conductive casing means having a first casing surface positioned substantially adjacent to an interior surface opposite said exterior surface of said container and a second casing surface positioned substantially adjacent to said first tab surface; said casing means extending from said first casing surface to said second casing surface and extending to partially surround said tab to provide a third casing surface positioned substantially adjacent to a second tab surface opposite said first tab surface; said container, said casing and said tab having a hole extending from said outer surface to at least said second tab surface; a conducting pin extending through said hole at least from said outer surface to said first tab surface, said conducting pin making electric contact with said tab.

4,195,279

ATTACHING OF STRAIN GAGES TO SUBSTRATES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Meyer M. Lemcoe, Upper Arlington, and Harry E. Pattee, Columbus, both of Ohio

Filed Feb. 16, 1978, Ser. No. 878,539
Int. Cl.[2] G01L *1/22*
U.S. Cl. 338—2 **5 Claims**



1. A method for installing a strain gage device having a substantially flat lower surface portion, on a substantially flat base, comprising:

placing a solid foil of brazing material between said gage and said base prior to heating of them; and

heating the foil to a temperature between the melting points of said foil and said base;

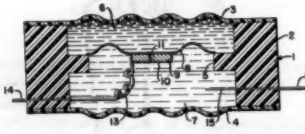
said step of heating including passing a current through at least said foil primarily in a direction along the plane of said foil between opposite sides thereof.

4,195,280

TUNED ELECTROLYTIC DETECTOR

Herbert V. Hillery, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1955, Ser. No. 506,391
Int. Cl.[2] G01V *1/00*; H04B *13/00*; H04R *15/00*
U.S. Cl. 367—171 **4 Claims**



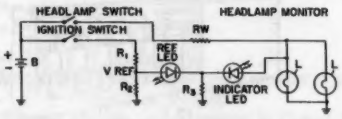
1. A tuned electrolytic detector cell comprising an inert plastic casing of generally cylindrical configuration, a pair of diaphragms closing the ends of said casing, an interior wall portion disposed transversely within said casing and having an opening for fluid communication therethrough, a compliant diaphragm secured to said wall portion and having an aperture centrally disposed therein, an orificed cathode box having a mass therein, attached to the central portion of said compliant diaphragm with the orifice thereof aligned with said aperture thereby to establish fluid communication therethrough, and an anode in said casing.

4,195,281

LAMP OUTAGE INDICATOR CIRCUIT

Robert E. Bell, Harper Woods, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 779,662, Mar. 21, 1977, abandoned. This application Jun. 15, 1978, Ser. No. 915,840
Int. Cl.[2] G08B *23/00*; H05B *37/03*; B60Q *11/00*
U.S. Cl. 340—79 **7 Claims**



1. A lamp outage sensing and indicating circuit for sensing and indicating outage of a lamp, comprising:

a bridge circuit comprising first and second primary legs, said first primary leg comprising a relatively small electrical resistance and said lamp, said second primary leg comprising a pair of resistors;

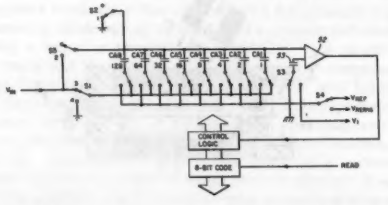
a secondary leg connected at one end intermediate said pair of resistors and at the other end intermediate said relatively small electrical resistance and said lamp; said secondary leg comprising reference and sensing semiconductor devices; said reference and sensing semiconductor devices being of the type which exhibit a turn-on threshold voltage above which said device is substantially conductive and below which said device is substantially nonconductive; said reference and sensing semi-conductor devices being connected such that whenever said lamp is operative, said reference semiconductor device is conductive and said sensing semiconductor device nonconductive, and whenever said lamp is inoperative, said sensing semiconductor device is conductive and said reference semiconductor device is nonconductive.

4,195,282

CHARGE REDISTRIBUTION CIRCUITS

Frank L. Cameron, Wellesley Hills, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 874,239, Feb. 1, 1978. This application Nov. 24, 1978, Ser. No. 963,489
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 AD **9 Claims**



1. A charge redistribution circuit for pulse-code modulation encoding comprising:

a single binary weighted capacitor array for the generation

of both segment and step boundaries of voice being encoded, each capacitor of said array having a pair of opposed plates, one plate of each of said capacitors being commonly coupled together;

a binary comparator having a pair of inputs and an output, a first of said inputs being adapted to be coupled to a reference bias potential, and a second of said inputs being coupled to said commonly coupled plates of said capacitor array;

means for receiving an input analog voice signal;

first switching means for connecting said commonly coupled plates to ground potential and for disconnecting said plates from ground potential;

a first common line;

a second common line;

second switching means for selectively connecting said first common line to said receiving means or to ground potential;

third switching means for selectively connecting said second common line to a predetermined reference voltage V_{REF}, or to a reference voltage $V_{REF/n}$ which is one nth said predetermined voltage, and for selectively coupling said first comparator input to ground potential or to said reference bias potential;

fourth switching means, including a switch for each said capacitor, for selectively coupling the other plates of each of said capacitors of said array to said first common line, or to said second common line;

code generating means for providing a digital output upon receipt of a read instruction and control signals applied thereto; and

control logic means for controlling said four switching means, responsive to the output of said comparator, and for providing control signals to said generating means, wherein n is a positive integer.

4,195,283

METHOD FOR CONVERTING AN ANALOG VOLTAGE TO A DIGITAL VALUE FREE FROM CONVERSION ERRORS, AND AN INTEGRATING TYPE ANALOG-TO-DIGITAL CONVERTER CAPABLE OF ELIMINATING CONVERSION ERRORS

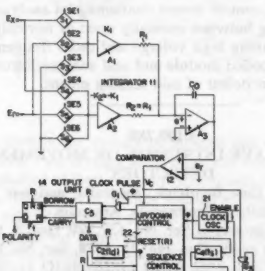
Masaoki Ishikawa, 8-8-14, Tsukimino, Yamato-shi, Kanagawa-ken, Japan

Filed Aug. 1, 1978, Ser. No. 930,011

Claims priority, application Japan, Aug. 9, 1977, 52-95353

Int. Cl.[2] H03K *13/20*

U.S. Cl. 340—347 NT **18 Claims**



1. A method for converting an unknown analog voltage to a digital value comprising the steps of:

(1) executing first and second conversion cycles, said first and second independent conversion cycles, each conversion cycle comprising integrating an unknown analog voltage over a first time period which is the same for both of said conversion cycles and integrating a reference voltage over a second time period which is the same for both of said conversion cycles, said second time period of each of said first and second conversion cycles comprising first and second subperiods, the polarities of the unknown analog voltages in the respective first periods of said first and second conversion cycles being opposite to each other, the polarities of the reference voltage in the respective first and second subperiods of the second period of each of said first and second conversion cycles being opposite to each other, an integration output level at the begining of the first period of each of the first and second conversion cycles being the same as an integration output level at the end of the second period thereof, a predetermined subperiod of the first conversion cycle being equal in time duration to a corresponding predetermined subperiod of the second conversion cycle in which the polarity of the reference voltage is opposite to that in the predetermined subperiod of the first conversion cycle, and

(2) counting clock pulses of predetermined frequency in a first direction in the predetermined subperiods of said first and second conversion cycles and in a second direction during the other subperiods of the first and second conversion cycles.

4,195,284

SOUND GENERATOR

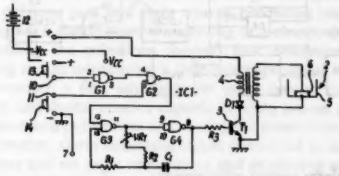
Michael J. Hampshire, Liversedge; Norman J. Poole, and John Parkes, both of Manchester, all of England, assignors to Ward & Goldstone Limited, Salford, England

Filed Aug. 9, 1977, Ser. No. 823,112

Claims priority, application United Kingdom, Aug. 11, 1976, 33341/76; Oct. 20, 1976, 43466/76

Int. Cl.[2] G08B *3/10*

U.S. Cl. 340—384 E **30 Claims**



1. A sound generator comprising a substantially circular end face, a cylindrical side wall integral with said end face, about the entire circumference of said end face, extending in one direction from said end face, and having a major cylindrical axis perpendicular to said end face, said end face and side wall defining a cylindrical enclosure closed at said end face, and open at the opposite axial end defined by said side wall, a crystal attached to said end face, oscillator means for pulsing said crystal at a pulsing frequency and for vibrating the end face and the integral side wall to generate audible pressure waves from the end face and from the integral side wall.

4,195,285

DOUBLE BUZZER ASSEMBLY

Alexander E. Bukala, Chicago, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

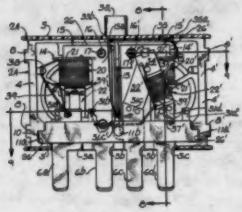
Filed Dec. 1, 1978, Ser. No. 965,272

Int. Cl.[2] G08B *3/00*

U.S. Cl. 340—402 **25 Claims**

1. A multi-input buzzer assembly comprising: a housing assembly including a main housing body having a parts-receiving opening confronted by a cover with said main housing body; first and second buzzer units mounted in said main housing body through said parts-receiving opening; a timer and terminal-carrying sub-assembly mounted through said parts-

receiving opening in said main housing body, said sub-assembly including a support base carrying respective terminals exposed to the outside of said main housing body and making separate electrical connection with said buzzer units so that the



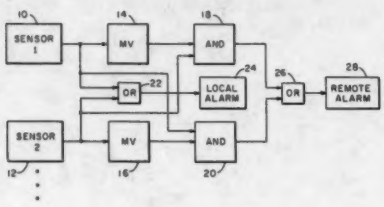
buzzer units can be independently energized, and a timer including heater means and normally closed switch means in series with one of said buzzer units which open the circuit to said unit after the heater means has been energized for a given period of time.

4,195,286

ALARM SYSTEM HAVING IMPROVED FALSE ALARM RATE AND DETECTION RELIABILITY

Aaron A. Galvin, Lexington, Mass., assignor to American District Telegraph Company, New York, N.Y.

Filed Jan. 6, 1978, Ser. No. 867,479
Int. Cl.[2] G08B *29/00*
U.S. Cl. 340—501 **5 Claims**



1. An alarm system comprising:

a plurality of sensors providing overlapping coverage of a common protected area and each providing a sensor signal when actuated by an alarm condition in the protected area;

OR circuit means coupled to said sensors and operative in response to any one of the sensor signals to provide a first alarm signal having high detection reliability; and

logic circuit means coupled to said sensors and operative in response to sensor signals from at least two of said sensors present within a predetermined time interval to provide a second alarm signal having a low false alarm rate;

said time interval commencing immediately upon the occurrence of the first of said sensor signals.

4,195,287

FIRE AND ABSENCE DETECTION AND ALARM SYSTEM FOR BED OCCUPANTS

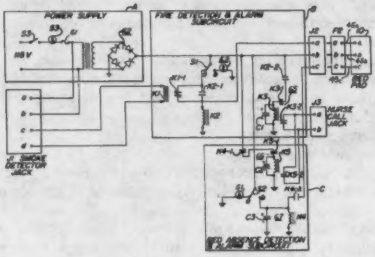
Roy G. McCoy, 120 Douglas St., Cartersville, Ga. 30120, and James C. Mathis, Hill St., Milan, Tenn. 38358

Filed Nov. 28, 1977, Ser. No. 855,375
Int. Cl.[2] G08B *19/00*
U.S. Cl. 340—521 **10 Claims**

1. A bed occupant security system comprising:

(a) an integral sensing assembly for disposal in a bed including a first means for sensing abnormally high temperature conditions in said bed and a second means for sensing the absence of said occupant,

(b) means coupled to said first means for sensing abnormally high temperature conditions for producing a first signal having a first characteristic, and



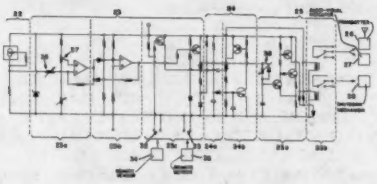
(c) means responsive to said second means for sensing the absence of said occupant for producing a second signal having a second characteristic distinguishing it from said first signal.

4,195,288

ALARM SYSTEM

Henry H. Morton, 100 Covington St., Wadesboro, N.C. 28170

Filed Feb. 21, 1978, Ser. No. 879,428
Int. Cl.[2] G08B *19/00*
U.S. Cl. 340—539 **11 Claims**



1. An alarm device comprising: a protective loop, said loop including a coded module and a pair of conductors joined to said coded module, said conductors connected to normally opened and normally closed sensing means, a multi-functional alarm control means connected to said conductors, said multi-functional alarm control means containing an analyzer circuit for discriminating between normally open or normally closed violations and having high voltage and radio frequency input protection, said coded module and said analyzer circuit cooperating to prevent defeat of said sensing means.

4,195,289

MICROWAVE INTRUSION OR MOVEMENT DETECTORS

Martin T. Cole, East Bentleigh, Australia, assignor to I.E.I. Proprietary Limited, Huntingdale, Australia

Continuation-in-part of Ser. No. 637,394, Dec. 3, 1975, abandoned. This application Jan. 31, 1978, Ser. No. 873,922
Int. Cl.[2] G01S *9/42;* G08B *13/18;* H01Q *13/06*
U.S. Cl. 340—554 **6 Claims**

1. A microwave movement detector, comprising:

a transmitter for generating and radiating a microwave signal;

a microwave receiver for detecting reflected surveying signals from said transmitter;

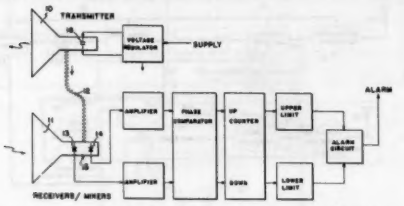
a microwave transmission means for coupling a reference signal from said transmitter to said microwave receiver;

said microwave receiver comprises:

a waveguide;

a plurality of receiving/mixing means producing outputs which are a function of said reference signal and said reflected surveying signal, each of said receiving/mixing means positioned within said waveguide for creating a unique phase delay between said reference signal and said reflected surveying signal;

phase comparison means responsive to each of said receiving/mixing devices for creating first and second level



signals as a function of the relative phase delay between the outputs of said receiving/mixing means;

a counter means for counting in a first direction in response to signals of said first level from said phase comparing means and in a second direction in response to signals of said second level from said phase comparing means; and means to produce an alarm when said counter exceeds a predetermined upper or lower count.

4,195,290

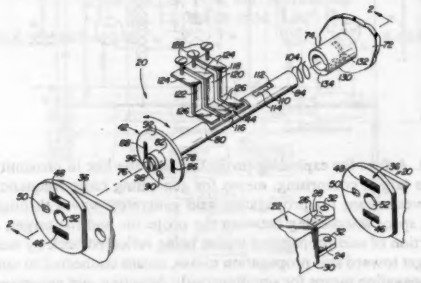
ELECTRICAL RECEPTACLE FOR USE IN ALARM SYSTEM

Paul Magil, and William F. Word, III, both of Long Beach, Calif., assignors to Paul Alan Magil & Associates, Costa Mesa, Calif.

Filed Mar. 24, 1978, Ser. No. 889,786

Int. Cl.[2] G08B *13/02, 21/00*

U.S. Cl. 340—568 **16 Claims**



1. A receptacle for receipt of at least one electrical plug having at least two prongs, said receptacle comprising a face portion including at least one pair of openings and at least one pair of electric power terminals located behind the face portion, each pair of terminals aligned with a corresponding pair of openings, lockout means and switching means, said lockout means being moveable between a closed position in which said lockout means occludes at least one of an associated pair of openings to prevent the prongs of an electrical plug from being inserted therethrough and into electrical communication with the power terminals and an open position wherein the lockout means does not occlude either opening, to thereby enable the prongs of the plug to be inserted therethrough and into electrical communication with the power terminals, said switching means being electrically isolated from said power terminals and providing a first signal indicating either the presence of a plug within the associated pair of openings (if the lockout means is in the open position) or indicating the existence of the lockout means in the closed position.

4,195,291

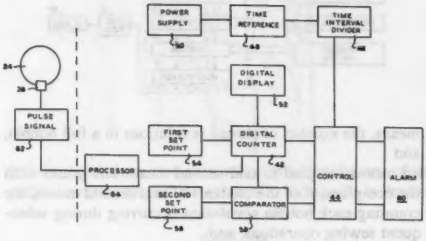
DIGITAL CONTROLLED ROTATION SENSOR

Kenneth N. Burks, Jr., Little Rock, Ark., assignor to Ward Industries, Inc., Jackson, Mich.

Filed Apr. 24, 1978, Ser. No. 898,707

Int. Cl.[2] G08B *21/00*

U.S. Cl. 340—671 **2 Claims**



1. A digital controlled rotation sensor for sensing the reduction of the rate of rotation of a member comprising, in combination, a sensor rotatably driven by the member to be sensed, said sensor producing an electronic signal pulsating at a rate directly proportioned to the rate of rotation of the member to be sensed and comprising a rotatable shaft drivenly connected to the member to be sensed, a circular disc mounted on said shaft for rotation therewith, alternately positioned light transparent and opaque portions defined on said disc, an infrared light source located adjacent one side of said disc and infrared light sensing means disposed adjacent the other side of said disc for sensing the rate of alternation of said light transparent and opaque portions past said light source producing said electronic signal, a digital counter receiving said electronic signal and counting the pulsations thereof, time reference signal producing means introducing a time reference signal into said digital counter, a first adjustable set point comparator connected to said digital counter capable of being pre-set to sense a predetermined pulse count and sensing the pulse count of said digital counter, alarm indicating means connected to said digital counter and set point comparator and producing an alarm control signal upon said set point comparator's sensing a predetermined reduction in the number of pulses being counted by said digital counter and the setting of said comparator, a second adjustable set point comparator connected to said digital counter capable of being pre-set to sense a predetermined pulse count and sensing the pulse count of said digital counter, said second set point comparator being connected to said alarm indicating means producing a second alarm control signal upon said second set point comparator sensing a predetermined reduction in the number of pulses being counted by said digital counter and the setting of said second set point comparator which is a greater reduction than the reduction in the number of pulses compared by said first set point comparator.

4,195,292

PROGRAMMABLE BOBBIN THREAD DETECTOR

Joseph M. Puhich, 3655 Prune Ridge Ave., Apt. 169, Santa Clara, Calif. 95051

Filed Mar. 9, 1978, Ser. No. 884,994

Int. Cl.[2] B65H *63/02*; G08B *29/00*

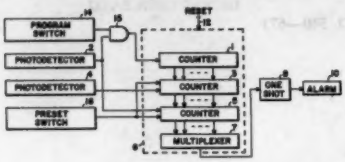
U.S. Cl. 340—677 **22 Claims**

1. An apparatus for indicating that the length of thread remaining on a sewing machine bobbin in the form of a number of thread revolutions, each one of which corresponds to a bobbin revolution, is at least as long as a predetermined seam length, comprising:

means for monitoring the number of thread revolutions remaining on said bobbin, said means for monitoring comprising:

first means for counting the number of bobbin revolutions occurring when sewing a seam of said predetermined length;

second means for counting, coupled to said first means and preset with the complement of the contents of said first



means, the number of thread revolutions in a full bobbin; and

third means, coupled to said second means and preset with the complement of the contents of said second means, for counting each bobbin revolution occurring during subsequent sewing operations; and

means for generating a signal when the number of thread revolutions remaining on said bobbin is sufficient to complete only one more seam of said predetermined length.

4,195,293

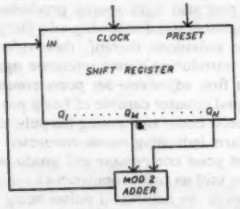
RANDOM DOT GENERATOR FOR RASTER SCAN VIDEO DISPLAYS

Jed Margolin, 555 W. Middlefield Rd, #B201, Mountain View, Calif. 94043

Filed May 18, 1978, Ser. No. 906,966

Int. Cl.[2] G06K *15/20*

U.S. Cl. 340—732 **11 Claims**



1. A random dot generator for raster scan video displays comprising:

clock means for providing clock pulses at a selected rate in synchronism with the scanning rate of the video display;

a linear-feedback-shift-register having a plurality of stages including an output stage, said register being responsive to said clock pulses and operative to provide a miximal length pseudorandom binery bit sequence from said output stage;

preset means for presetting said register to the same non-zero state after the completion of each field of video display; and

means for applying said bit sequence to the normal video input terminal of a video display.

4,195,294

DUAL CHANNEL PROXIMITY FUZE

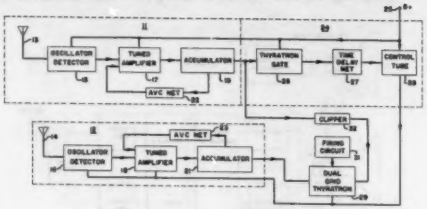
John D. Reid, Little Rock, Ark., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1956, Ser. No. 622,510

Int. Cl.[2] F42C *13/04*; G01S *9/02*

U.S. Cl. 343—7 PF **8 Claims**

1. A fuze for detonating a projectile in proximity to a target comprising, first normally effective transceiver channel means for effecting radiation of a first electromagnetic signal into space and for receiving electromagnetic signals therefrom, including any portion of said first radiated signal reflected from a target, second transceiver channel means initially ineffective to radiate and receive a signal adapted to being rendered effective for effecting radiation of a second electromag-



netic signal into space and for receiving electromagnetic signals therefrom, including any portion of said second radiated signal reflected from a target, control circuit means for rendering said second channel means effective, and normally nonoperating electroresponsive detonating circuit means adapted to being rendered operating by said channel means for detonating said projectile.

4,195,295

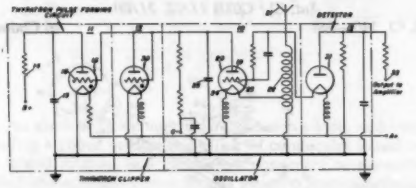
PULSE DOPPLER-RADIO PROXIMITY FUZE

John H. Kuck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 210,851, Feb. 14, 1951. This application Jan. 14, 1959, Ser. No. 786,899

Int. Cl.[2] F42C *13/04*; G01S *9/02*

U.S. Cl. 343—7 PF **5 Claims**



1. A fuze for exploding projectiles and the like in proximity to a target, comprising, means for generating radio frequency waves, means for propagating said generated waves through the space intervening between the projectile and the target, a portion of said propagated waves being reflected back by said target toward said propagation means, means connected to said propagation means for simultaneously detecting said generated waves and said reflected waves to provide a signal for firing said fuze, said detecting means being sensitive to said reflected waves only in the presence of said generated waves, a variable impedance connected to said wave generating means, and means for varying said impedance from a relatively high value to a relatively low value thereby terminating the operation of said wave generating means to render said detecting means insensitive both to reflected waves and to spurious waves.

4,195,296

MICROWAVE CIRCULATOR

John C. Williams, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,133

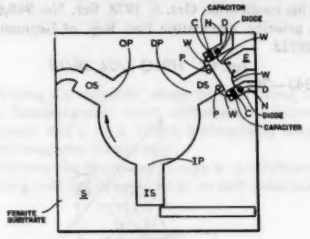
Claims priority, application United Kingdom, Mar. 14, 1977, 10614/77

Int. Cl.[2] G01S *9/50*

U.S. Cl. 343—8 **5 Claims**

1. A signal detection device for a Doppler radar system or

the like comprising a circulator having an input port for receiving a signal to be transmitted toward a target, an antenna port for supplying to an antenna of the radar the signal to be transmitted and for receiving an echo signal reflected from the target, a detector port for supplying a signal comprising the echo signal and a small portion of the signal to be transmitted transferred thereto from said input port, said portion of said signal to be transmitted at said detector port having a phase which varies transversely of said detector port, said detection



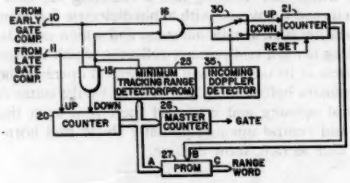
device further including a first and second detector means each connected to a respective one of two points spaced transversely across said detector port for producing, from said echo signal and said portion of said signal to be transmitted, two output signals of different phase and a frequency indicative of the velocity of the target relative to the radar system, the phase difference between said output signals being indicative of approach or recession of the target with respect to the radar system.

4,195,297

SHORT RANGE RADAR TRACKING APPARATUS

Leo B. Conner, Jr., Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 23, 1978, Ser. No. 880,669
Int. Cl.² G01S *9/14, 9/37*
U.S. Cl. 343—12 R **6 Claims**



5. In a doppler radar of the type having early and late gate, leading edge tracking means, a method of estimating the range of a target during short range tracking comprising the steps of:

(a) counting doppler cycles from the early gate circuitry; and

(b) changing the range by a predetermined distance for each doppler cycle.

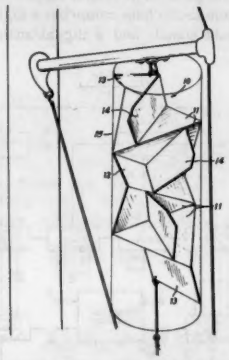
4,195,298

TARGET RADAR REFLECTOR

John H. Firth, 15 The Gowers, Harlow, Essex, England

Filed Jun. 21, 1978, Ser. No. 917,573
Int. Cl.² H01Q *15/18*
U.S. Cl. 343—18 C **11 Claims**

1. A radar reflector having a major axis and comprising at least six corner reflectors directed outwardly of said major axis



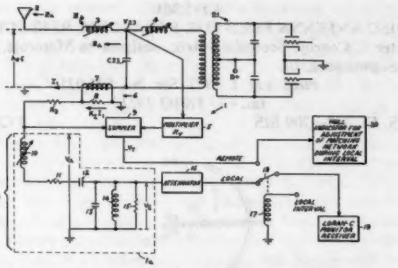
and disposed along two successive helical paths one of which paths is sinistrorse and the other of which paths is dextrorse.

4,195,299

LORAN-C SYSTEM MONITOR CIRCUIT

James P. Van Etten, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 2, 1978, Ser. No. 882,690
Int. Cl.² G01S *1/24*
U.S. Cl. 343—103 **8 Claims**



1. A Loran-C system monitor circuit comprising:

a Loran-C antenna and coupling circuit therefore disposed at a given site, said antenna and coupling circuit therefore being employed for both transmitting and receiving Loran-C signals;

first means disposed at said given site coupled to said antenna coupling circuit to detect far-field remote signals; and

second means disposed at said given site coupled to said antenna coupling circuit to detect far-field local signals.

4,195,300

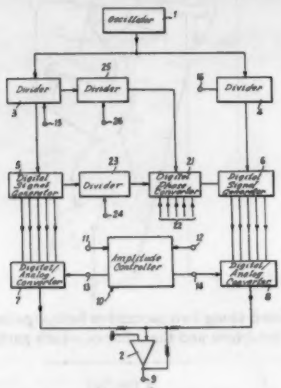
DEVICE FOR SIMULATING THE LOCATING SIGNALS OF AN ILS BEACON

Claude A. Gouley, Cugnaux, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jul. 13, 1978, Ser. No. 923,930
Claims priority, application France, Jul. 20, 1977, 77 22212
Int. Cl.² G01S *1/24*
U.S. Cl. 343—109 **9 Claims**

1. A device for simulating the locating signals emitted by an ILS beacon having a radiation pattern comprising two elongated lobes, each of which lobes is symmetrical with respect to a longitudinal axis and corresponds to a high frequency signal carrying a low frequency sinusoidal modulation signal, said low frequencies being different from each other and each being specific to the lobe to which it corresponds,

said device comprising two chains in parallel respectively adapted for the generation of said sinusoidal modulation signals, wherein each chain comprises a digital generator for one of said signals and a digital/analog converter



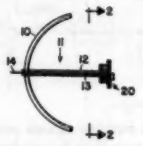
provided with an input for controlling the reference amplitude of its output voltage and wherein said device comprises an at least partially digital arrangement for producing reference voltages applied to said inputs for controlling said digital/analog converters.

4,195,301

DISC ANTENNA FEED FOR PARABOLIC REFLECTOR

Peter J. Conroy, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1977, Ser. No. 821,021
Int. Cl.[2] H01Q *19/12*
U.S. Cl. 343—700 MS **9 Claims**



1. An antenna comprising:

(a) a reflector having a generally paraboloidal shape with an axis through the focus thereof;

(b) a feedline including an outer electrical conductor and an inner electrical conductor, said outer conductor being affixed to said reflector in outwardly extending relationship generally coaxial with the axis of said reflector and said inner conductor extending through an opening in said reflector to form an input for the antenna;

(c) a first disc formed of electricaliy conducting material and affixed coaxially to the outer conductor in spaced relation to said reflector, said first disc having a first, centrally located opening therethrough and a second opening spaced radially outwardly from the first opening with the inner conductor of said feedline extending outwardly through the first opening and inwardly back through the second opening in spaced relation from said reflector; and

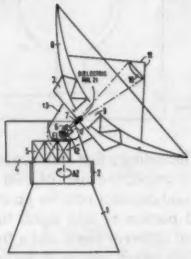
(d) a second disc formed of electrically conducting material and affixed coaxially to the outer conductor between said reflector and said first disc and in spaced relation therefrom, the inner conductor of said feedline extending through the second opening of said first disc being electrically connected to said second disc in radially outwardly spaced relation to the center thereof, said first disc forming a ground plane and said second disc forming a disc radiator of a disc antenna feed for said reflector.

4,195,302

DOUBLE REFLECTOR ANTENNA WITH FEED HORN PROTECTION

Uwe Leupelt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 800,654, May 26, 1977, abandoned. This application Oct. 5, 1978, Ser. No. 948,669
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628713
Int. Cl.[2] H01Q *1/02, 19/18*
U.S. Cl. 343—704 **1 Claim**



1. A double reflector rotation symmetrical antenna, such as a Cassegrain or Gregory antenna for the frequency range above 6 GHz and in particular above 10 GHz, installed in a satellite base station, comprising, a base member, an elevation shaft, a housing mounted on said base member, an antenna frame member rotatably supported on said elevation shaft, said elevation shaft supported by said housing, a primary reflector mounted on said frame member and formed with a central opening, a secondary reflector supported from said primary reflector and aligned with said central opening, and a primary field radiator mounted behind said primary reflector on said frame member to direct and receive radiant energy from said secondary reflector and including a receiving amplifier mounted within said housing and a radiating far field horn which on its end is covered with a thin dielectric foil to protect it from weather such as rain and snow and which extends from said housing toward said primary reflector which has substantial thickness at its center about said central opening and said horn terminates before the plane defined by the outer end of said central opening and is spared therefrom such that the walls of said central opening partially shield said horn from moisture such as rain, snow and ice.

4,195,303

MAGNETIC PRINTING PROCESS AND APPARATUS

Donald W. Edwards, Wilmington, Del., and Emery J. Gorondy, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

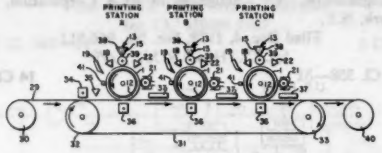
Continuation-in-part of Ser. No. 771,062, Feb. 25, 1977, which is a continuation-in-part of Ser. No. 672,553, Mar. 31, 1976, abandoned. This application Mar. 15, 1977, Ser. No. 777,242
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.[2] G01D *15/06*; G11B *9/00*
U.S. Cl. 346—74.1 **89 Claims**

1. Magnetic printing process comprising:

(a) providing a ferromagnetic material capable of continuously discharging an electric charge through its thickness to a support on which it is imposed, said support being electrically grounded; and

(b) forming a magnetic image on said ferromagnetic material by (i) magnetizing said ferromagnetic material in its en-

tirety and thereafter heating one or more portions of said ferromagnetic material so as to at least partially demagnetize said portions; or (ii) magnetizing selected portions of said ferromagnetic material;



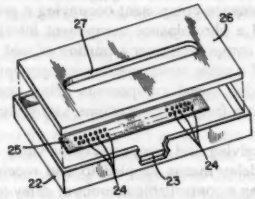
(c) developing the magnetic image by decorating the image with a ferromagnetic toner comprising a ferromagnetic component and a resin which substantially encapsulates the ferromagnetic component;
(d) transferring the developed image to a substrate; and
(e) adhering said developed image to said substrate.

4,195,304

CHARGE PLATE AND METHOD OF MANUFACTURE

James L. Gudorf, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 5, 1978, Ser. No. 912,495
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **6 Claims**



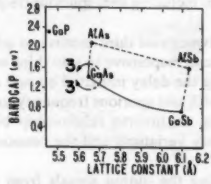
1. A charge plate for an ink jet printer comprising:
(a) a rigid support plate provided with a medially extending elongated slot,
(b) a non-conductive plastic electrode support structure provided with a series of molded charge tunnels and cast in place adheringly against the walls of said slot,
(c) charge electrodes adhered to the walls of said tunnels, and
(d) electrical lead means attached to said electrodes.

4,195,305

LATTICE CONSTANT GRADING IN THE $Al_yGa_{1-y}As_{1-z}Sb_z$ ALLOY SYSTEM

Ronald L. Moon, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 25, 1978, Ser. No. 945,653
Int. Cl.² H01L *29/16*
U.S. Cl. 357—16 **6 Claims**



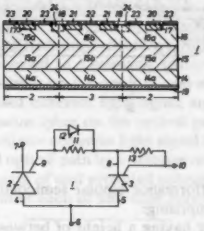
1. A semiconductor device subassembly comprising a crystalline GaAs substrate and a transition layer of AlGaAsSb grown on said substrate and compositionally graded in Al content to substantially match the lattice constant of said substrate at said substrate surface, said layer further graded in diminishing Al composition in the direction of growth.

4,195,306

GATE TURN-OFF THYRISTOR

Marius Fullmann, Neu-Isenburg; Friedhelm Sawitzki, Frankfurt am Main, and Dieter Silber, Hausen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 4, 1976, Ser. No. 711,690
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1975, 2534703
Int. Cl.² H01L *29/747*
U.S. Cl. 357—38 **13 Claims**



1. In a gate turn-off thyristor device including: a semiconductor body having three zones of alternatingly opposite conductivity type between the major surfaces thereof which constitute the control base, main base and counter-emitter zones respectively of a gate turn-off thyristor, and an emitter zone of a conductivity type opposite that of said control base zone formed in said control base zone at one of said major surfaces; said control base, main base and counter emitter zones of said semiconductor body being each divided into first and second regions with said emitter zone being in said first region of said control base zone, whereby said emitter zone and said first regions of each of said control base, main base and counter-emitter zones constitute a main gate turn-off thyristor; a further emitter zone of a conductivity type opposite that of said control base zone formed in said second region of said control base zone at said one major surface, whereby said further emitter zone and said second regions of each of said control base, main base and counter-emitter zones constitute an auxiliary gate turn-off thyristor; a common ohmic contact for said first and second regions of said counter-emitter zone; a respective ohmic contact on said one major surface for each of said first region of said control base zone, said second region of said control base zone, said emitter zone and said further emitter zone; and conductive means connecting said contact for said first region of said control base zone to said contact for said further emitter zone, whereby said contact for said first region of said control base zone and said common contact for both regions of said counter-emitter zone constitute the load current terminals of said thyristor device and said ohmic contact for said second region of said control base zone constitutes the control current input terminal of said thyristor device for turning same on and off; the improvement wherein: said first and second regions of at least one of said zones of said semiconductor body are differently doped to cause said auxiliary thyristor to have a turn-off gain and a holding current which are sufficiently less than the turn-off gain and the holding current respectively of said main thyristor so that said auxiliary thyristor will remain conducting during the current conducting switched-on state of said main thyristor and continuously feed a control current to said control electrode of said main thyristor to reduce the forward voltage drop of said main thyristor

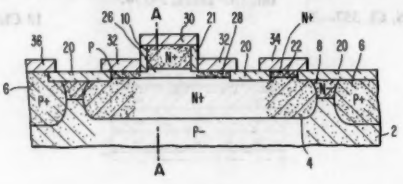
whereby the on-state behavior of said semiconductor switch is improved and the holding current of said semiconductor switch is reduced.

4,195,307

FABRICATING INTEGRATED CIRCUITS INCORPORATING HIGH-PERFORMANCE BIPOLAR TRANSISTORS

Chakrapani G. Jambotkar, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 818,640, Jul. 25, 1977, Pat. No. 4,099,987.
This application Apr. 17, 1978, Ser. No. 896,654
Int. Cl.[2] H01L *29/06, 29/72*
U.S. Cl. 357—56 **5 Claims**



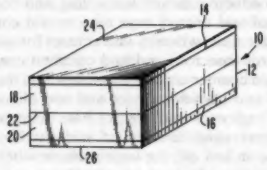
1. A high performance bipolar semiconductor device in a silicon body comprising:
- a mesa emitter having a height of between about 5000 and 12000 Angstroms above said silicon body;
- passivation on the side peripheral surface of said mesa emitter;
- a base region including extrinsic and intrinsic base regions;
- said extrinsic base region surrounding said mesa emitter in said silicon body;
- said intrinsic base region forming a junction with said mesa emitter substantially in one plane; and
- an electrical contact to the top surface of said mesa emitter;
- an electrical contact to said extrinsic base region;
- said contact to said base region surrounding the said emitter mesa and abutting the said passivation on the peripheral surface of said emitter; and
- the thickness of said electrical contacts are substantially equal and about 1.5 to 2 times smaller than the height of said mesa emitter.

4,195,308

OHMIC CONTACT FOR P TYPE INDIUM PHOSPHIDE

Frank Z. Hawrylo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,117
Int. Cl.[2] H01L *23/48*
U.S. Cl. 357—67 **7 Claims**



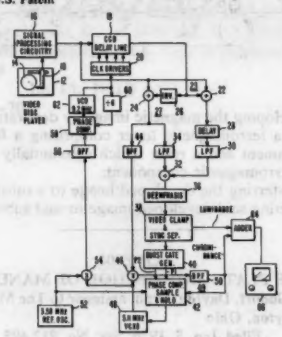
1. A semiconductor device comprising:
- a body including a region of P type indium phosphide, and
- a contact on said P type indium phosphide region, said contact comprising an alloy of gold, germanium and zinc in which the germanium is present in an amount of 11% to 14% by weight.

4,195,309

VIDEO PROCESSING SYSTEM INCLUDING COMB FILTERS

Christopher, Todd J., Indianapolis, Ind., and Larry L. Tretter, Poughkeepsie, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,512
Int. Cl.[2] H04N *9/535, 5/79*
U.S. Cl. 358—31 **14 Claims**

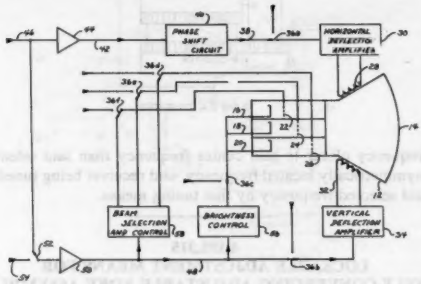


1. A system for processing composite color video signals including a luminance component occupying a given band of frequencies and a chrominance component interleaved with said luminance component over a portion of said given band and inclusive of a color synchronizing component, said composite color video signal components being concomitantly subject to spurious frequency variations; said system comprising:
- means for receiving said composite color video signals;
- controllable delay means coupled to said receiving means for imparting a controllable amount of delay to said composite color video signals;
- first comb filter means including means for subtractively combining signals provided by said delay means and said receiving means;
- second comb filter means including means for additively combining signals provided by said delay means and said receiving means;
- frequency reference means for providing a fixed reference frequency;
- first means for frequency translating the output of said first comb filter means to a frequency substantially equal to the reference frequency;
- second means, responsive to said reference frequency means and to said frequency translated signal for providing an output signal including said spurious frequency variations to said frequency translating means, whereby said spurious frequency variations are substantially reduced in said frequency translated signal;
- third means coupled to said second means and said reference frequency means for providing an output signal at a nominal frequency and including said spurious frequency variations;
- means, coupled between said third means and said controllable delay means and responsive to said third means output signal for varying the delay imparted by said delay means concomitantly with said spurious frequency variations in a sense establishing an inverse relationship between said spurious frequency variations and the concomitant delay variations; and
- means for combining the output signals from said second comb filter means and said first means for providing an output composite color video signal.

4,195,310
KINESCOPE DRIVE SYSTEM FOR DISPLAYING AUDIO SIGNALS

John L. Anello, Auburn, Calif., assignor to Phastek, Auburn, Calif.

Filed Jul. 12, 1978, Ser. No. 923,826
Int. Cl.[2] H04N 9/02
U.S. Cl. 358—81 5 Claims

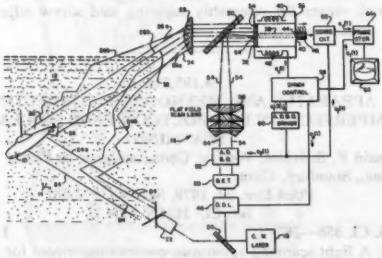


1. A system for driving a kinescope in response to an audio signal to produce an aesthetic pattern thereon that varies with the frequency and amplitude of the audio signal, said kinescope being of the type having a screen, a cathode for producing an electron beam for impinging on the screen, and first and second orthogonal deflection means for deflecting the beam to effect excitation of selected regions of the screen, said system comprising means for coupling said audio signal to said first deflection means, phase shifting means for shifting the phase of said audio signal by 90° at a given audio frequency, means coupling the outlet of said phase shifting means to said second deflection means, means for adjusting said given audio frequency within the audio range; means responsive to the amplitude of the audio signal for varying the intensity of the beam produced by said cathode so that the brightness of said pattern varies with the magnitude of said audio signal; and, switch means for alternately producing a first output which activates said cathode and a second output which deactivates said cathode and means responsive to said audio signal for activating said switch in response to the magnitude of said audio signal.

4,195,311
COHERENCE LENGTH GATED OPTICAL IMAGING SYSTEM

Steven E. Moran, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1978, Ser. No. 937,655
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—95 11 Claims



1. Apparatus for overcoming scatter interference in viewing an object through a diffusive medium, said apparatus comprising:

source means for providing a coherent light signal of selected coherence length;

means receiving a first component of said provided coherent light signal for projecting said first component through said diffusive medium to said object;

means positioned to receive a portion of said first component of said coherent light signal which is reflected by said object back through said diffusive medium, said portion comprising a received coherent light signal;

means receiving a second component of said provided coherent light signal for shifting the frequency of said second component by a selected amount to provide a local oscillator coherent light signal;

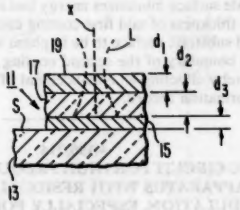
means optically coupled to said receiving means and said frequency shifting means for heterodyning said local oscillator coherent light signal with light of said received coherent light signal during each time period in a succession of time periods to provide successive sets of discrete heterodyne signals, the heterodyne signals of one of said sets together representing reflective surfaces of said object which are included in a viewing space having a linear dimension which is on the order of said coherence length of said provided coherent light signal; and

optical delay means lying on the optical path traversed by said local oscillator coherent light signal for changing the length of said optical path by a distance on the order of the coherence length of said provided coherent light signal at the conclusion of each of said time periods.

4,195,312
RECORDER AND ANTIREFLECTIVE RECORD BLANK HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER

Alan E. Bell, East Windsor, and Robert A. Bartolini, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 880,759
Int. Cl.[2] G01D 15/34; G11B 7/00; H04N 5/76
U.S. Cl. 179—100.1 G 3 Claims



1. In a radiant energy recording system employing a recording laser providing light of a given frequency; a record blank comprising the combination of:

a substrate;

a layer of material exhibiting high reflectivity at said given frequency, said layer overlying a surface of said substrate;

a first coating, of a thickness equal to an integer multiple of the half-wavelength of the laser light output passing therethrough, exhibiting light transparency at said given frequency, said first coating overlying said layer; and

a second transmissive coating exhibiting both absorptivity and antireflectivity at said given frequency, said second coating overlying said first coating;

wherein the antireflectivity of said second coating minimizes energy loss due to reflection, the reflectivity of said layer minimizes energy loss into said substrate and the thickness of said first coating causes light reflected by said layer to be in phase with light reflected at the boundary of the second coating and the first coating thereby effecting an enhancement of the sensitivity of the record blank.

4,195,313

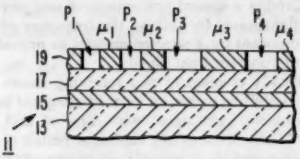
ANTIREFLECTIVE INFORMATION RECORD HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER

Alan E. Bell, East Windsor, and Robert A. Bartolini, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 880,759, Feb. 24, 1978. This application Dec. 14, 1978, Ser. No. 969,472

Int. Cl.[2] H04N *5/76;* **G11B** *7/24*

U.S. Cl. 179—100.1 G **4 Claims**



1. In a radiant energy recording system employing a recording laser providing light of a given frequency an information record comprising the combination of:

a substrate having a light reflective surface;

a first coating, of a thickness equal to an integer multiple of the half-wavelength of the laser light output passing therethrough, exhibiting light transparency at said given frequency, said first coating overlying said light reflective surface; and

a second transmissive coating, said second coating overlying said first coating, said second coating being formed from a light absorptive material and having an information track formed therein;

wherein said information track comprises a succession of spaced pits, with variations in the spacing between successive pit edges representative of recorded information;

said second coating exhibiting antireflectivity at said given frequency in all regions other than those occupied by said pits;

wherein the antireflectivity of said second coating minimizes energy loss due to reflection, the reflectivity of said substrate surface minimizes energy loss into said substrate and the thickness of said first coating causes light reflected by said substrate surface to be in phase with light reflected at the boundary of the second coating and the first coating thereby effecting an enhancement of the sensitivity of the information record.

4,195,314

TUNING CIRCUIT FOR HIGH FREQUENCY RECEIVING APPARATUS WITH RESIDUAL SIDEBAND MODULATION, ESPECIALLY FOR TELEVISION RECEIVERS

Willy Minner, Schwaigern; Paul Sieber, and Ibolya Haraszti, both of Heilbronn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

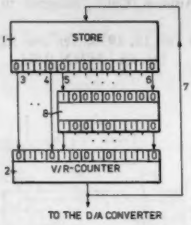
Filed Apr. 21, 1978, Ser. No. 898,867

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720170

Int. Cl.[2] H04N *5/44*

U.S. Cl. 455—185 **8 Claims**

1. In combination with a high frequency receiving apparatus employing residual sideband modulation wherein the frequencies of the received signals are asymmetrically located with respect to the center frequency of the selection curve of said receiving apparatus; a tuning circuit comprising digital storage means for storing an encoded voltage corresponding to a selected one of said asymmetrically located frequencies, a counter for generating an encoded tuning voltage, and a digital-to-analog converter having an input coupled to the input of said storage means and the output of said counter for generating an analog voltage corresponding to the encoded tuning voltage at the output of said counter; wherein the improvement comprises digital circuit means coupled to said counter for shifting said analog voltage to a value corresponding to a



frequency closer to said center frequency than said selected asymmetrically located frequency, said receiver being tuned to said selected frequency by fine tuning means.

4,195,315

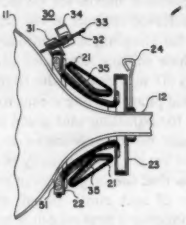
LOCKABLE ADJUSTMENT MEANS FOR SELF-CONVERGING ADJUSTABLE YOKE ASSEMBLY

Charles P. Pytlarz, Lake Zurich, and Richard L. Rost, Barrington, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 29, 1978, Ser. No. 947,130

Int. Cl.[2] H01F *15/02*

U.S. Cl. 358—248 **7 Claims**



1. For use in a color television receiver including a picture tube having a funnel and a neck;

a low-cost self-converging beam deflection yoke and mounting system adapted to fit on said neck in close proximity to said funnel, said deflection yoke having a flexible plastic liner sandwiched between pairs of appropriately shaped horizontal and vertical deflection coils and including clamp means for securing said liner to the neck of the picture tube;

screw adjustment means mounted to said liner for abutting engagement with said funnel, rotation of said screw adjustment means tilting said yoke on said neck and altering its axial position with respect to the tube axis; and

lock means for releasably securing said screw adjustment means in position.

4,195,316

APPARATUS AND METHOD FOR CORRECTING IMPERFECTION IN A POLYGON USED FOR LASER SCANNING

Ronald P. Sansome, Weston, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

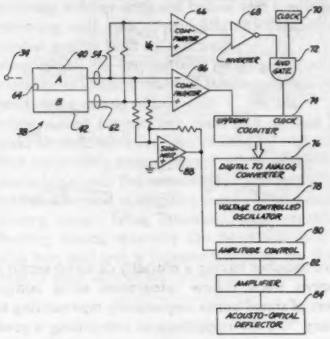
Filed Dec. 22, 1978, Ser. No. 972,582

Int. Cl.[2] H04N *1/04*

U.S. Cl. 358—285 **1 Claim**

1. A light scanning apparatus, comprising: means for generating a laser beam, a multifaceted reflective polygon positioned in the beam path, amplitude modulating means intermediate

the laser gernerating means and the polygon for deflecting the beam, means for rotating the polygon, whereby a beam being reflected from successive facets of the polygon sweeps along a scan path to provide successive raster lines, and a photoreceptor positioned to have a portion of each of the raster lines extend thereacross, the improvement comprising: detector means being positioned along the scan path adjacent to the photoreceptor in the path of at least part of the balance of each of said raster lines, said detector means including a reflective



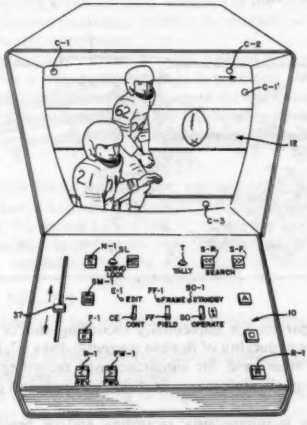
surface and a transparent surface, first light sensing means spaced relative to said reflective surface to receive light reflected from said reflective surface, second light sensing means spaced relative to said transparent surface to receive light passing therethrough, means connecting said first and second light sensing means with the amplitude modulating means to provide at least one signal indicative of the presence of the beam at a said surface, the modulating means being responsive to said signal to adjust the location of the beam so as to be incident upon both of said surfaces simultaneously.

4,195,317

VIDEO RECORDING AND PLAYBACK EDITING SYSTEM WITH DISPLAYED CUE SIGNALS

Boyd L. Stratton, Woodside, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 842,247, Oct. 14, 1977, abandoned. This application Apr. 7, 1978, Ser. No. 894,413
Int. Cl.[2] H04N 5/78; G11B 27/02
U.S. Cl. 360—14 **20 Claims**



1. A circuit for use with a video recording system in which a plurality of segments of video information may be recorded and subsequently replayed in succession for display upon a video monitor, comprising:

cue signal means for providing cue signals at selected times during recording of said segments of video information,

means for recording each of said plurality of segments of video information at one of a plurality of record locations on a magnetic recording medium,

means for replaying said plurality of segments of video information from said record locations on said magnetic recording medium,

means for generating a clocking signal as successive segments of video information are recorded or replayed,

counter means for cyclically assuming successive count states in response to said clocking signal,

storage means, responsive to said counter means and to said cue signal means, for storing the count state of said counter means upon receipt of each of said cue signals, and

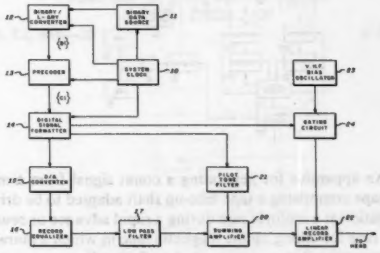
means for generating a cue display signal in response to said storage means whereby said cue display signal may be superimposed upon the video information during recording said replay.

4,195,318

HIGH DENSITY BIAS LINEARIZED MAGNETIC RECORDING SYSTEM UTILIZING NYQUIST BANDWIDTH PARTIAL RESPONSE TRANSMISSION

Robert Price, Lexington; John W. Craig, Sudbury, both of Mass.; Avraham Perahia, Simi Valley, Calif., and Hartvig E. Melbye, Wayland, Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,130
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—39 **44 Claims**



1. A high density digital magnetic data storage system for storing digital data represented as data pulse signals, comprising

recording channel means responsive to said data pulse signals for providing recording signals,

magnetic interface means having a magnetic recording medium and read and record head means responsive to said recording signals, said head means and said magnetic medium adapted for relative motion with respect to each other for recording said recording signals on said medium,

reading channel means responsive to said recorded signals for providing read back pulse signals corresponding thereto,

said recording channel means, magnetic interface means and reading channel means comprising a partial response channel with the amplitude spectrum of said readback pulse signals having a null at the Nyquist frequency,

bias means for providing a bias signal to said head means for linearizing the recording process with respect to said medium,

recovery means responsive to said read back signals for

providing recovered signals corresponding to said data pulse signals,

pilot tone generating means in said recording channel means for generating a pilot tone signal,

means for combining said pilot tone signal with said recording signals for recording on said medium,

pilot tone recovery means in said reading channel means responsive to said head means for recovering said recorded pilot tone,

envelope detector means responsive to said recovered pilot tone for providing a signal in accordance with the envelope thereof, and

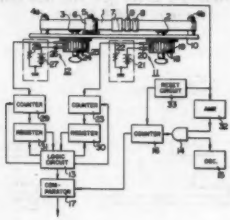
gain control means responsive to said envelope signal for adjusting the gain of said reading channel means in accordance with said envelope signal, thereby gain stabilizing said system.

4,195,319

APPARATUS FOR DETECTING INFORMATION INDEX SIGNAL FROM MAGNETIC TAPE

Masatoshi Ida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Dec. 26, 1978, Ser. No. 972,808
Claims priority, application Japan, Jan. 12, 1978, 53/2459
Int. Cl.[2] G11B *15/43*
U.S. Cl. 360—72.1 **5 Claims**



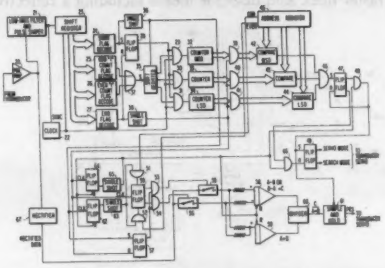
1. An apparatus for generating a count signal from a magnetic tape comprising a tape take-up shaft adapted to be driven for rotation at a uniform rate during a rapid advance or rewind of the tape for taking up the magnetic tape in which a plurality of information items are recorded, a first pulse generator responsive to the rotation of the tape take-up shaft to produce a reference pulse signal, a tape supply shaft adapted to rotate as the tape is taken up on the take-up shaft with a rotational speed which increases with an increasing diameter of tape roll on the take-up shaft, a second pulse generator responsive to the rotation of the tape supply shaft to produce a pulse signal at a rate which depends on the varying speed of the supply shaft, means for counting the number of pulses produced per unit time by the first and second pulse generators, a logic circuit for converting a ratio of the number of both pulses into a continuous voltage value which is proportional to the varying tape speed, a detecting head for detecting a signal-free area between adjacent information items recorded on the magnetic tape, an AND gate enabled by a detection signal from the detecting head for passing clock pulses from a clock pulse generator, a pulse counter for receiving clock pulses from the AND gate, and a comparator receiving the count output from the pulse counter and a voltage value from the logic circuit and converting the count output into a corresponding voltage value, the comparator producing a count signal for information retrieval only upon coincidence between the both voltage values.

4,195,320

RECORD TRACK IDENTIFICATION AND FOLLOWING

Rolf Andresen, Broomfield, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1978, Ser. No. 906,301
Int. Cl.[2] G11B *21/10, 5/82*
U.S. Cl. 360—78 **6 Claims**



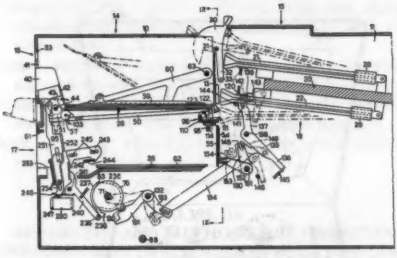
1. A record member having a plurality of servo sector areas, including servo track follow integration areas comprising equal numbers of signal bursts respectively representing binary "1" and binary "0", the improvement comprising a predetermined arrangement of said signal bursts to identify a plurality of record track location lines, said predetermined arrangement being characterized by the insertion of one of first or second binary codes which exhibit high self-correlation properties at positions within said integration areas corresponding to a consecutive number of said signal bursts equal to a digit in an address identifying one of said track location lines, said first and second binary codes bring complements and composed of an odd number of said signal bursts and being selected so as to maintain the number of signal bursts representing binary "1" and binary "0" in said servo track follow integration areas equal.

4,195,321

APPARATUS FOR LOADING A PLURALITY OF FLOPPY DISKS IN A READING AND/OR WRITING UNIT

Cesare Chelin, Caluso, and Armando Costa, Ivrea, both of Italy, assignors to Ing. C. Olivetti & Co., S.p.A., Italy

Filed Apr. 13, 1978, Ser. No. 896,220
Claims priority, application Italy, Apr. 20, 1977, 67873 A/77
Int. Cl.[2] G11B *17/00*
U.S. Cl. 360—98 **4 Claims**



1. An apparatus for sequentially recording and/or reading one at a time a plurality of flexible magnetic disks piled one on top of the other, and for simultaneously recording and/or reading a single flexible magnetic disk, said apparatus comprising:

a unit for simultaneously recording and/or reading two flexible magnetic disks, said unit comprising a first and a second transducer, a first and a second driving spindle,

first positioning means for positioning each disk of said plurality of disks with respect to said first transducer and said first driving spindle, and second positioning means for positioning said single disk with respect to said second transducer and said second driving spindle;

a loading stacker having a substantially horizontal base plate on which said plurality of disks are piled one on top of the other, said base plate being disposed substantially aligned with said first positioning means;

a receiving stacker disposed below said loading stacker for receiving each disk of said plurality of disks already recorded and/or read by said unit;

feeding means for sequentially feeding one at a time said plurality of disks from said loading stacker to said first positioning means of said unit;

ejecting means for ejecting each disk of said plurality of disks already recorded and/or read by said unit from said first positioning means to said receiving stacker; and

introducing means for manually introducing said single disk into said second positioning means of said unit, said introducing means being operable independently from said feeding means, whereby the introduction of said single disk into said unit is independent from the feeding operation of each disk of said plurality of disks.

4,195,322

RECORD/PLAYBACK HEAD AND DATA STORAGE APPARATUS THEREFOR

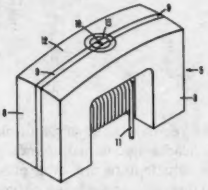
Allen R. Cox, Tucson, Ariz.; Rafael Pascual, Winchester, England, and Leonard J. Rigbey, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1978, Ser. No. 939,033

Claims priority, application United Kingdom, Sep. 30, 1977, 40815/77

Int. Cl.² G11B *5/60, 5/22, 21/20*

U.S. Cl. 360—103 **31 Claims**



1. A record/playback head, intended in use to coact with a moving flexible recording medium to establish an air bearing therebetween, comprising:

a progressively curved convex medium-facing surface in which a transducing element is provided and having an endless unbroken groove formed therein spaced from and completely surrounding the transducing element.

4,195,323

THIN FILM MAGNETIC RECORDING HEADS

Fred S. Lee, Oklahoma City, Okla., assignor to Magnex Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 830,104, Sep. 2, 1977. This application May 24, 1978, Ser. No. 909,285

Int. Cl.² G11B *5/16*

U.S. Cl. 360—113 **8 Claims**

1. A magnetic transducer head and slider assembly comprising:

a substrate having uniformly smooth surface and thickness at least equal to slider length;

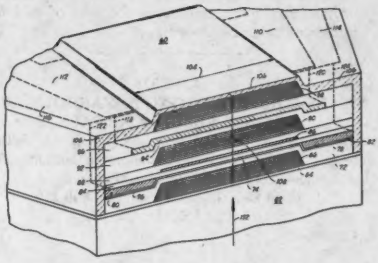
shield means consisting of magnetostatically coupled multi-layer thin films deposited insulatively on said substrate;

sensor means and substantially coextensive therewith magnetic thin film deposited insulatively on said shield means;

conductor means in electrical contact with said sensor means;

bias means comprising a thin film of permanent magnetic material deposited insulatively on said sensor means and substantially coextensive therewith;

shield pole means consisting of magnetostatically coupled multi-layer thin films deposited insulatively to overlay said bias means and substantially coextensive therewith;



write conductor means deposited insulatively on said pole means and substantially coextensive therewith;

trailing edge pole means consisting of magnetostatically coupled multi-layer thin films deposited insulatively to overlay said write conductor means; and

passive means deposited to overlay and encapsulate the composite of the film layers while exposing said conductor means; so as to form a highly sensitive thin film head.

4,195,324

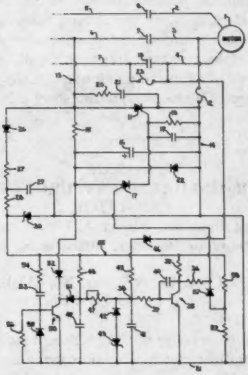
HEATING CIRCUIT FOR AN ELECTRIC MOTOR

Richard W. Waltz, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 26, 1978, Ser. No. 928,303

Int. Cl.² H02H *7/08*

U.S. Cl. 361—25 **6 Claims**



1. A motor heating circuit for use in combination with a motor starter having a set of line contacts which couple a.c. line current to the winding of an a.c. motor, comprising:

electronic switch means having current conducting elements which are connected across one of said line contacts and a current control element which is responsive to an applied gating signal to enable current conduction through said current conducting elements to said motor winding;

gating signal generator means having an output connected to said current control element and being operable to generate said gating signal once during each cycle of line cur-

rent, the timing of said generated gating signal being a function of the magnitude of a command signal applied to its input terminal;

a feedback circuit coupled to the a.c. motor to generate a feedback signal indicative of motor temperature;

a reference circuit for generating a preselected signal; and

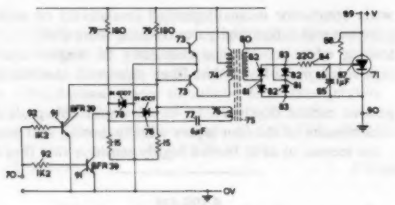
a summing circuit connected to said feedback signal circuit and said reference signal circuit for generating a command signal to the input of said gating signal generator which is proportional in magnitude to the sum of said feedback signal and said reference signal.

4,195,325

MEANS FOR PROTECTING HAZARDOUS AREAS AGAINST ELECTRICAL FAULTS

Edward G. Richardson, Bath, and Keith H. Williamson, Fetcham, both of England, assignors to National Research Development Corporation, London, England

Filed Dec. 13, 1977, Ser. No. 860,219
Int. Cl.[2] H02H *3/20, 7/20*
U.S. Cl. 361—56 **7 Claims**



1. An electrical safety device for fail-safe protection of an electrical system against electrical transients, which device comprises an SCR to provide a short circuit for hazard isolation, a first biassing circuit arranged to supply a first bias signal capable of switching on the SCR and a second biassing circuit arranged to supply a second SCR bias signal equal in magnitude and of opposite polarity to the first bias signal so that in normal use the SCR is off, the second biassing circuit being operative to remove the second bias signal in response to an input thereto of an electrical transient signal having a rate of change in excess of a threshold value so that the first bias signal switches on the SCR to provide the short circuit for hazard isolation.

4,195,326

PREDETERMINED TEMPERATURE COEFFICIENT CAPACITOR

Frank A. Ruegg, Brea, and William A. Vitriol, Anaheim, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 12, 1977, Ser. No. 832,327
Int. Cl.[2] H01G *4/36*
U.S. Cl. 361—274 **8 Claims**

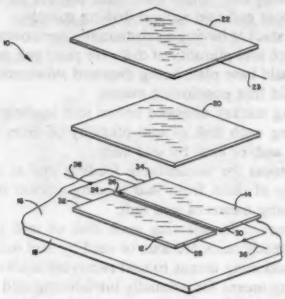
1. A thick film capacitor with a predetermined fixed temperature coefficient of capacitance, said capacitor comprising:

a substrate;

a first layer of at least two separate electrodes of different materials positioned side by side in the same layer plane, said two separate electrodes being physically in contact with each other;

a dielectric layer fired on said two separate electrodes; and

a top layer electrode formed over said dielectric, the effects of said dielectric layer being fired over said two separate electrodes providing in conjunction with said top layer electrode a negative temperature coefficient of capacitance with one of said two separate electrodes and a positive temperature coefficient of capacitance with the other of said two separate electrodes, said two separate electrodes operating in conjunction with said top layer electrode to provide a capacitor with said predetermined temperature coefficient of capacitance.

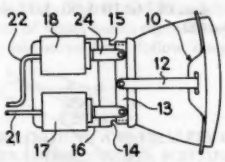


4,195,327

DEVICE FOR REGULATING THE ANGLE OF ELEVATION OF THE HEADLAMPS OF A VEHICLE

Gerard Piquot, Bois-Colombes, France, assignor to Automobiles Peugeot, Paris, France

Filed Mar. 10, 1978, Ser. No. 885,204
Claims priority, application France, Mar. 18, 1977, 77 08194
Int. Cl.[2] B60Q *1/10;* **F21M** *3/00*
U.S. Cl. 362—66 **3 Claims**



1. A device for regulating the angle of elevation or depression of a vehicle headlamp comprising means for mounting the headlamp on the vehicle to be pivotable about an axis which is transverse to the direction of the beam of light given out by the headlamp, driving means connected to an upper part of the headlamp, a swing-bar connected to said driving means, a support for mounting the swing-bar on the vehicle, the swing-bar being pivotable relative to the support, two fluid-operated jacks carried by the support and each having a rod capable of occupying two positions, means for supplying fluid to the jacks, the swing-bar having end portions respectively pivoted to the rods of the jacks, and abutments fixed relative to the support and cooperable with the end portions of the swing-bar for defining end-to-end travel positions of the swing-bar.

4,195,328

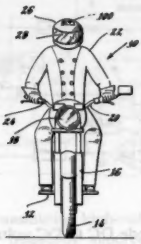
OPEN VEHICLE LIGHTING SYSTEM UTILIZING DETACHABLE VEHICLE OPERATOR HELMET MOUNTED LIGHT

William R. Harris, Jr., 109 Wilton Rd., Westport, Conn. 06880

Filed Jun. 19, 1978, Ser. No. 916,513
Int. Cl.[2] F21V *33/00*
U.S. Cl. 362—72 **10 Claims**

1. In a lighting system for an open vehicle carrying an operator exposed to the vehicle surroundings, including a main headlight having means to rigidly secure it to the vehicle for projecting a beam of light forward of the vehicle, an electrical circuit connecting the main headlight to a power source, a

switch forming part of the electrical circuit, the switch being located for access by the operator and activatable by the operator to cause the main headlight to project a beam of light, the improvement therein comprising an auxiliary headlight detachably mounted on a helmet worn by the vehicle operator, electrical circuit connecting means detachably connecting the auxiliary headlight to the electrical circuit and switch of the main headlight to be activatable by the operator to project an auxiliary beam of light in conjunction therewith, the auxiliary headlight projecting the auxiliary beam of light in a plurality of



directions independent of the direction of the beam of the main headlight at the discretion of the vehicle operator under conditions of vehicle use and the main headlight and the auxiliary headlight being spaced apart in a vertical plane normal to the path of travel of the vehicle to project two distinct separate sources of light when viewed from a remote location in the forward path of travel of the vehicle, whereby improved illumination of the path of travel of the vehicle, enhanced visibility of the vehicle and operator and greater safety of operation is obtained.

4,195,329

DIAGNOSTIC LAMP, PARTICULARLY FOR CHECKING TEETH

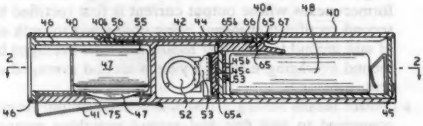
Philippe-Guy E. Woog, Vesenaz, Switzerland, assignor to Les Produits Associes LPA SA, Geneva, Switzerland

Continuation-in-part of Ser. No. 744,751, Nov. 24, 1976. This application Dec. 1, 1977, Ser. No. 856,396

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2725793

Int. Cl.[2] B25B *23/18*

U.S. Cl. 362—120 **7 Claims**



1. A diagnostic lamp for fluorescent excitation of a fluorescible material applied to a part of a body to be tested, comprising:

a housing of a size which can be handled easily and conveniently by a user, said housing having two opposing open ends;

two insert assemblies, each of which is removably push fitted into one of the two opposing open ends of said housing;

one of said insert assemblies including a light source and adapted for accommodating a power supply for said light source, and associated electrical circuitry;

the other of said insert assemblies containing a dispenser for fluorescible material;

a filter positioned in-front of said light source for allowing the transmission of a exciting radiation necessary to the generation of fluorescence of the fluorescible material; and

a cover attached to the housing, having a mirror on an inside surface thereof, said cover being movable between an open position where the light source and mirror are exposed and a closed position in which the light source and mirror are protected by said cover.

4,195,330

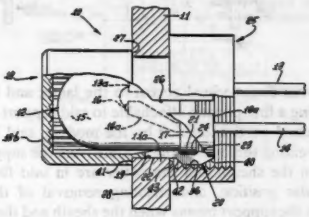
LENS CLIP AND CAP FOR LED OR LIGHT UNIT ASSEMBLY

John M. Savage, Jr., 8118 W. 83rd St., Apt. C, Playa Del Rey, Calif. 90291

Continuation-in-part of Ser. No. 787,016, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,626, Dec. 8, 1975, abandoned. This application May 19, 1978, Ser. No. 907,735

Int. Cl.[2] H01R *33/00*

U.S. Cl. 362—226 **39 Claims**



1. In a light emitting diode assembly attachable to a display panel, said assembly comprising:

(a) a light emitting diode, having locking structure thereon, said structure defining a boss,

(b) a lens cap receiving the diode forwardly therein, clips means integral with the cap and projecting sidewardly proximate the diode locking structure,

(c) said clip means defining spring fingers projecting rearwardly at the side of the diode, the fingers defining first grooves to receive the boss on the diode and second grooves to receive portions of the display panel adjacent an opening formed therein, and wherein,

(d) the spring fingers define first cam surfaces rearwardly of the first grooves and angled to be radially spread by the diode boss in response to forward insertion of the diode into the cap.

4,195,331

LAMP CHANGING MODULE

Eric. M. Jones, Los Angeles, Calif., assignor to Karl Storz Endoscopy-America, Inc., Los Angeles, Calif.

Filed Dec. 30, 1977, Ser. No. 865,940

Int. Cl.[2] F21V *25/12*; H01J *5/02, 5/12, 5/14, 5/48*

U.S. Cl. 362—368 **22 Claims**

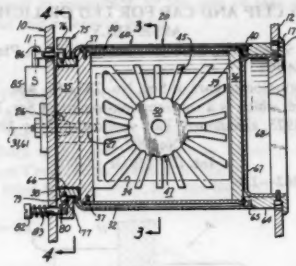
1. A lamp changing module for totally enclosing and assuring the total enclosure of a lamp at the time when the module is withdrawn from a support means, and permitting exposure of the lamp when it is connected to said support means, said module comprising:

an internal sheath having an axis and a window facing said axis, said window having a peripheral extent not greater than 180°;

lamp mounting means non-rotatably secured to said sheath, and connected thereto for axial movement therewith, said lamp mounting means being adapted to support a lamp so it emits light toward said window;

electrical connection means carried by said lamp mounting means adapted to make electrical connection with the lamp;

a tubular cover surrounding said sheath having an axis and an aperture facing said axis, said cover being mounted to said sheath for rotation relative thereto, said axes being coincident or parallel, and said window and aperture being so disposed and arranged that in a first relative angular position of the sheath and cover they are aligned to give direct visual access to the lamp, and in a second relative angular position they are non-aligned so as to



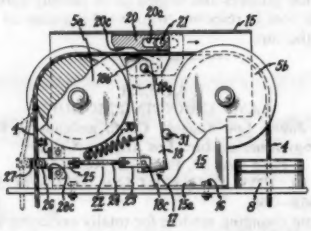
prevent direct visual access to the lamp; and key means having a first portion attachable to said support means and a second portion carried by the module, said key means preventing removal of the module from the support means when the sheath and the cover are in said first relative angular position, and enabling removal of the module from the support means when the sheath and the cover are in said second relative angular position.

4,195,332

LUMINAIRE HOIST SAFETY DEVICE WITH AUTOMATIC BRAKE MEANS ADJACENT TOP CABLE GUIDE

Richard L. Thompson, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed May 22, 1978, Ser. No. 908,187
Int. Cl.² F21V *21/36*
U.S. Cl. 362—391 **10 Claims**



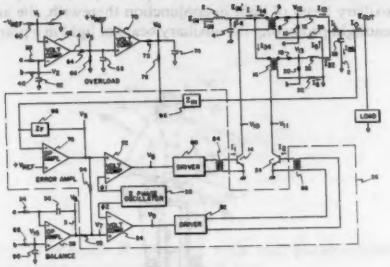
1. Hoist apparatus and safety device therefor comprising, in combination, a pole, fixed support means secured at the top of said pole, load support means movable between the top and bottom of said pole, hoist means for raising and lowering said load support means on said pole, cable guide means mounted on said fixed support means, hoist cable means passing around said guide means and connected at one end to said load support means and at the other end to said hoist means, and brake means adjacent to said guide means and in operative engagement with said hoist cable means and responsive to the breakage thereof for automatically clamping and holding said hoist cable means for preventing fall of said load support means.

4,195,333

DC TO DC VOLTAGE CONVERTER

Kurt K. Hedel, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed May 30, 1978, Ser. No. 910,330
Int. Cl.² H02M *3/335*
U.S. Cl. 363—21 **9 Claims**



1. A staggered mode DC to DC voltage converter for converting an input DC signal subject to voltage variations to a regulated output DC voltage comprising:

an input filter consisting of a first inductor and first capacitor connected in series, having said input DC signal applied across said inductor and capacitor;

a first single ended converter having a first and second input terminal, said first input terminal being connected to said input filter at a point located between said first inductor and said first capacitor, and said second input terminal being connected to a first switching means so as to switch said first single ended converter to a conducting or nonconducting state at specific times, said first single ended converter further comprising a first transformer means whose output current is first rectified by a first rectification means being connected to both ends of said first transformer means and then averaged by a first averaging means to yield a first average current;

a second single ended converter having a first and second input terminal, said first input terminal being connected to said input filter at a point located between said first inductor and said first capacitor, and said second input terminal being connected to a second switching means so as to switch said second single ended converter to a conducting and nonconducting state at specific times, said second single ended converter further comprising a second transformer means whose output current is first rectified by a second rectification means being connected to both ends of said second transformer means and then averaged by a second averaging means to yield a second averaged current;

a control means having a first and second output terminal connected to said first and second switching means to switch said second single ended converter to a conducting or nonconducting state at specific times when said first single ended converter is switched to a nonconducting or conducting state respectively;

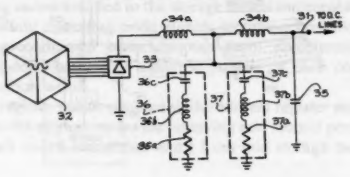
an output filter having a first and second terminal, said first terminal being connected to said first and said second single ended converters to accept the d.c. and a.c. components of said first and second averaged current, said a.c. currents being out of phase with one another combining so as to reduce the ripple current in said output, said first terminal of said output filter being connected to a first input terminal of said control means; and

a power balancing means for equally balancing the power between said first and second single ended converters and providing a balance signal to said control means to adjust the specific times that said first and second switching means are turned on and off.

4,195,334
HIGH-VOLTAGE DC TRANSMISSION SYSTEM AND METHOD

Elijah R. Perry, Portola Valley, and Mario Rabinowitz, Menlo Park, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 25, 1977, Ser. No. 854,977
Int. Cl.² H02M 1/12
U.S. Cl. 363—44 **18 Claims**

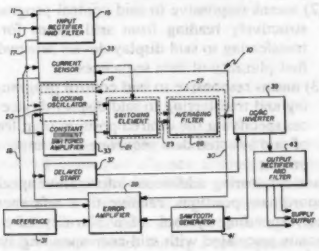


1. In a system for transmitting high-voltage DC comprising a high-voltage, high frequency superconducting generator having at least four phases and generating a voltage of at least substantially 138 kV at a frequency of at least substantially 120 Hz, rectifying means coupled directly to said generator to receive the output therefrom free of step-up transformer action applied to the output of said generating means so as to provide a high voltage DC output, and filtering means coupled to receive said DC output of said rectifying means, said filtering means being characterized by a substantial reduction of reactance for filtering the DC output.

4,195,335
SWITCHING POWER SUPPLY HAVING A WIDE RANGE INPUT CAPABILITY

David Murakami, Federal Way, and Donald J. Som.ner, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 20, 1978, Ser. No. 926,455
Int. Cl.² H02P 13/16
U.S. Cl. 363—49 **14 Claims**



1. A switching regulator type power supply which advances operationally from a startup mode to a steady state mode, comprising:

a. input means for receiving an input voltage;

b. switching and filtering means providing an intermediate voltage signal when energized;

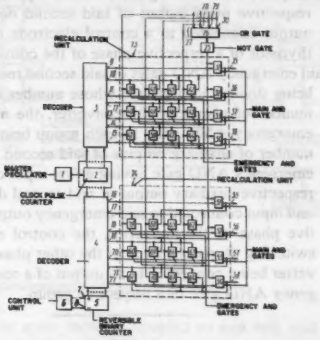
c. circuit means for energizing said switching and filtering means, including a circuit portion operative to function as a blocking oscillator during an initial portion of the time that the power supply is operating in its startup mode, and as a constant current switched amplifier thereafter, including during the time that the power supply is operating in its steady state mode; and

d. output means responsive to said intermediate voltage signal for providing a supply output voltage.

4,195,336
DIGITAL CONTROL DEVICE FOR MULTIPHASE THYRISTOR-PULSE D.C. CONVERTER

Anatoly Y. Kalinichenko, Moscow, U.S.S.R., assignor to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia, Moscow, U.S.S.R.

Filed May 17, 1978, Ser. No. 907,020
Int. Cl.² H02M 7/515
U.S. Cl. 363—137 **1 Claim**



1. A digital control device controlling a multiphase thyristor-pulse d.c. converter and comprising:

a master oscillator;

a clock pulse counter having an input connected to an output of said master oscillator, and outputs;

a control unit;

a reversible counter having add and subtract inputs respectively connected to add and subtract outputs of said control unit, and outputs;

a first decoder having inputs connected to respective outputs of said clock pulse counter, main outputs equal in number to the number of phases of the converter, and auxiliary outputs alternating with said main outputs, the number of said auxiliary outputs being one less than the number of said main outputs;

a second decoder having inputs connected to respective outputs of said clock pulse counter and to respective outputs of said reversible counter, main outputs equal in number to the number of phases of the converter, and auxiliary outputs alternating with said main outputs, the number of said auxiliary outputs being one less than the number of said main outputs;

a NOT gate having an input and an output;

an OR gate having inputs connected to an emergency output of a respective phase of the converter, and an output connected to said input of said NOT gate;

a first recalculation unit including main AND gates and emergency AND gates;

said main AND gates of said first recalculation unit being equal in number to the number of phases of the converter, each main AND gate having a first input connected to said output of said NOT gate, a second input connected to a respective main output of said first decoder, and an output connected to a control electrode of a main thyristor of a respective phase of the converter;

said emergency AND gates of said first recalculation unit being divided into groups whose number is equal to the number of phases of the converter, the number of said emergency AND gates in each group being equal to the number of auxiliary outputs of said first decoder, each emergency AND gate having a first input connected to a

respective auxiliary output of said first decoder, a second input connected to said emergency output of a respective phase of the converter, the control electrode of a main thyristor of one of the other phases of the converter being connected to an output of a respective emergency AND gate of a respective group;

a second recalculation unit including main AND gates and emergency AND gates;

said main AND gates of said second recalculation unit being equal in number to the number of phases of the converter, each main AND gate having a first input connected to the output of said NOT gate, a second input connected to a respective main output of said second decoder, and an output connected to a control electrode of a switching thyristor of a respective phase of the converter; and

said emergency AND gates of said second recalculation unit being divided into groups whose number is equal to the number of phases of the converter, the number of said emergency AND gates in each group being equal to the number of auxiliary outputs of said second decoder, each emergency AND gate having a first input connected to a respective auxiliary output of said second decoder, a second input connected to said emergency output of a respective phase of the converter, the control electrode of a switching thyristor of one of the other phases of the converter being connected to an output of a respective emergency AND gate of a respective group.

4,195,337

CONTROL METHOD UTILIZING A MODEL CONTROL SCHEME

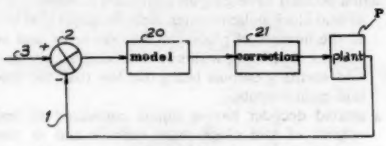
Pierre Bertrand, Plessis Robinson; Michel Jamet, Nantes; Jacques Strub, Les Ulis, and Eric Walter, Cachan, all of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Neuilly sur Seine, France

Filed May 24, 1978, Ser. No. 909,063

Claims priority, application France, May 26, 1977, 77 16114

Int. Cl.[2] G05B *13/02, 17/02;* G06G *7/66*

U.S. Cl. 364—106 **14 Claims**



2. A method for controlling a process, said process being effected by a plant responsive to a control signal applied thereto and generating a plant output signal in accordance with a predetermined plant transfer function, said method comprising the steps of:

generating an error signal from said plant output signal and a reference signal, said error signal being indicative of deviations from said plant output signal from said reference signal;

generating from said error signal respective proportional and successive order derivative output signals in accordance with a predetermined model transfer function; and

generating, in accordance with a second predetermined transfer function, inverse from said plant transfer function, said control signal from said aforementioned proportional and successive order derivative output signals, said control signals being of the form $k_0+k_1p+k_2p^2+\ldots k_np^n$, where p, $p^2 \ldots p^n$ represents the first, second . . . and nth derivative output signals; and

adjusting said predetermined model transfer function to define desired response time and overshoot for said plant.

4,195,338

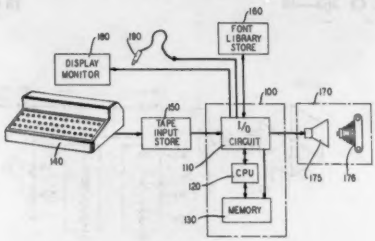
COMPUTER TYPESETTING

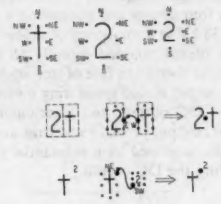
Richard D. Freeman, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 6, 1970, Ser. No. 35,025

Int. Cl.[2] G06F *3/14;* G03B *15/00*

U.S. Cl. 364—200 **10 Claims**





1. In a computer display system comprising

(A) a display device for generating relatively-positioned symbol images in response to applied sequences of signals specifying the shape and position of said images,

(B) a data processor comprising

(1) means for storing a first plurality of data sequences, each describing individual symbols, and a second plurality of data sequences corresponding to a control program,

(2) means responsive to said control program for nondestructively reading from said means for storing and transferring to said display device selected ones of said first plurality of data sequences,

(3) means responsive to said control program for generating and transferring to said display device data sequences specifying the desired position of at least a first one of said selected data sequences, the improvement comprising

means for storing additional information specifying spatial coordinate positions, relative to a reference point on a corresponding symbol, of a plurality of concatenation points associated with said corresponding symbol, and

means responsive to said control program for generating and transferring to said display device data signals specifying the coincidence of at least one specified concatenation point of a given symbol with specified concatenation points on adjacent symbols.

4,195,339

SEQUENTIAL CONTROL SYSTEM

Walter A. Smith, and Raymond T. Harp, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 4, 1977, Ser. No. 821,942

Int. Cl.[2] G11C *8/00*

U.S. Cl. 364—200 **6 Claims**

1. A multi-cycle control system for causing a series of events

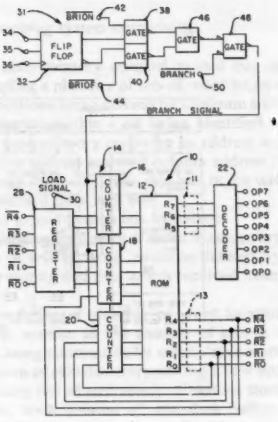
to occur in sequence and capable of altering said sequence, comprising:

storage means for storing a plurality of coded instruction words at a corresponding plurality of addresses, each word comprising a first and a second portion;

address register means coupled to the storage means for providing an address to select a coded instruction word, said address register means being capable of incrementing the address provided in successive operations of the system by a predetermined increment and also capable of modifying the address in a non-incrementing mode;

decoding means coupled to the storage means and capable of generating operating code signals including conditional and unconditional branch signals from predetermined signal combinations of said first portion of each coded instruction word;

second register means coupled to the address register means and to the storage means for receiving said second portion of each coded instruction word from said storage means



under control of an operating code signal from the decoding means to provide part of a new address and presenting an address modifying code which corresponds to said second portion to the address register means to cause a modified address to be provided to the storage means by the address register means during a subsequent operation of the system; and

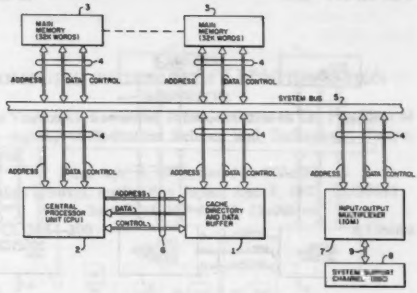
branch control means coupled to and controlled by the decoding means and coupled to the address register means for controlling whether or not an address modifying code is loaded into the address register means during a given operation, said branch control means including indicator means settable during a first cycle by a signal from a selected origin, and also including logic means responsive to the condition of the indicator means and to conditional and unconditional branch signals, and capable of controlling said second register means to determine whether or not a modified address is provided to the storage means by the address register means during a subsequent cycle of operation of the system.

4,195,340

FIRST IN FIRST OUT ACTIVITY QUEUE FOR A CACHE STORE

Thomas F. Joyce, Burlington, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,091
Int. Cl.[2] G06F *13/00*; G11C *9/06*
U.S. Cl. 364—200 **10 Claims**



1. A data processing system comprising:

a system bus;

an addressable main memory coupled to said bus, said main memory including a plurality of sets of word locations, each set of word locations being defined by a column address, and each word location within a set being defined by a row address, said main memory receiving an address word comprising said row address and said column address from said bus for identifying a word location for reading a data word onto said bus or for writing said data word received from said bus;

a central processor unit coupled to said bus, and at least one data handling unit coupled to said bus for transmitting data to said bus for storage in said main memory;

a cache coupled to said system bus including;

a data buffer having a plurality of word locations arranged in a plurality of sets of word locations defined by said column address, and an addressable directory having a plurality of word locations corresponding in number to the number of sets in said data buffer and being addressable by said column address, each word location on said directory storing a row address of a corresponding one of said words of said set stored in said data buffer;

an input buffer coupled to said bus, having a plurality of storage locations, and being operative to store information applied to said system bus by said central processor unit, said at least one data handling unit or said main memory during a bus cycle when said central processor unit, said at least one data handling unit or said main memory requests access to said bus for transfer of said information, said central processor unit, said at least one data handling unit and said main memory generating signals included within said information for specifying which type of operation is to be performed with respect to said information;

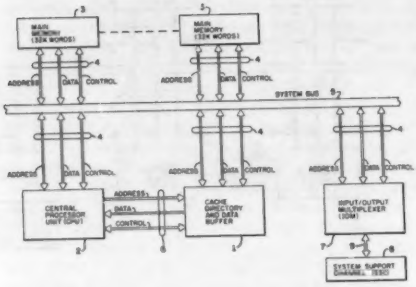
a replacement address file coupled to said central processor unit for storing memory request addresses received therefrom when said central processor unit requests said data word from said cache; and

means responsive to said signals included within said information for selecting transfer signals representative of an address from said input buffer or said address file to said directory and said data buffer for writing the corresponding data word in said data buffer to update and replace respectively said data word previously stored in said data buffer in accordance with said generated signals.

4,195,341
INITIALIZATION OF CACHE STORE TO ASSURE VALID DATA

Thomas F. Joyce, Burlington, and William Panepinto, Jr., Tewksbury, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,094
Int. Cl.[2] G06F *13/00*; G11C *9/06*
U.S. Cl. 364—200 18 Claims



1. A data processing system comprising:

a system bus;

an addressable main memory coupled to said bus, said main memory including a plurality of sets of word locations, each set of word locations being defined by an address;

a central processor unit coupled to said bus;

a cache coupled to said bus including,

a data buffer having a plurality of word locations for storing data words arranged in a plurality of sets of word locations defined by said address; and

a directory having a plurality of word locations corresponding to the number of sets in said data buffer, each word location of said directory storing an address of a corresponding one of said words of said set stored in said data buffer;

said cache further including mode control means coupled to said bus for receiving an initialization signal therefrom, indicative of said system startup operation for initializing;

cache main memory request means coupled to said mode control means for generating a sequence of main memory requests when conditioned by said mode control means; and

address generation means for generating main memory addresses included within said requests, said address generation means coupled to said bus and to said main memory requests means, said address generation means being conditioned by said request means to transfer a predetermined sequence of addresses included within corresponding ones of said sequence of requests to said system bus, said main memory in response to said requests applying to said system bus, information read out from the word locations corresponding to said sequences of addresses for writing into said data buffer and said directory thereby placing information stored in said cache in a known state.

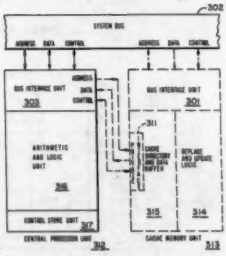
4,195,342
MULTI-CONFIGURABLE CACHE STORE SYSTEM

Thomas F. Joyce, Burlington, and Thomas O. Holtey, Newton Lower Falls, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,098
Int. Cl.[2] G06F *9/08*
U.S. Cl. 364—200 2 Claims

1. In a data processing system, having a system bus; and a main memory, a cache memory, a central processing unit (CPU) and a communications controller all connected in parallel to said system bus, said controller operating to supervise interconnection between said units via siad bus for transferring data therebetween, said CPU including memory request means for generating data requests, and said cache memory including private interface means connecting said cache memory directly to said CPU for permitting direct transmission of data requests from said CPU to said cache memory and direct transmission of requested data from said cache memory to said CPU; cache directory and data buffer means for evaluating said data requests and generating a first predetermined output when the requested data is not present in said cache memory; and system bus interface means connecting said cache memory to said system bus for obtaining CPU requested data not found in said cache memory from said main memory via said system bus in response to said first predetermined output from said cache directory and data buffer means; the improvement comprising:

selection means in said main memory responsive to a system operator for controlling the configuration of said main memory, said main memory being partitioned in modules, said modules having data stored therein in sequentially numbered addresses to constitute a banked storage mode, or said modules being arranged in pairs of modules, the first modules in each said pairs having even numbered



addresses and the second modules in each of said pairs having odd numbered addresses, said pairs of modules having successive elements of said data stored sequentially therein in said even and odd numbered addresses, alternating between said modules to constitute an interleaved storage mode;

read request means included in said system bus interface means, responsive to said first predetermined signal and said selection means, for obtaining a word containing the data requested by said CPU either from a specific address in one of said modules in said banked storage mode, or for obtaining two words containing data requested by said CPU from two successive adjacent addresses in two of said interleaved mode modules, one word being obtained from the first module of one of said pairs and the second of said words being obtained from the second module in said one of said pairs;

said cache memory generating a second predetermined output; and said read request means also including

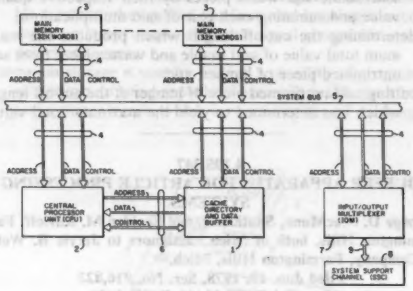
banked double pull means responsive to said second predetermined output from said cache memory, and said selection means, for obtaining two words containing CPU requested data from two successive addresses in one of said modules in said banked storage mode.

4,195,343

ROUND ROBIN REPLACEMENT FOR A CACHE STORE

Thomas F. Joyce, Burlington, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,102
Int. Cl.[2] G06F *13/00*; G11C *9/06*
U.S. Cl. 364—200 10 Claims



1. A data processing system comprising:

a system bus;

an addressable main memory coupled to said bus, said main memory including a plurality of sets of word locations, each set of word locations being defined by a column address, and each word location within a set being identified by a row address, said main memory receiving an address word comprising said row address and said column address from said bus for reading a data word onto said bus, or for writing said data word received from said bus;

a cache coupled to said system bus including:

a data buffer having a plurality of word locations arranged in a plurality of sets of word locations defined by column address for storing said data words received from said bus, and

a directory including a plurality of word locations corresponding in number to the number of sets in said data buffer and being addressable by said column address, each word location of said directory storing a row address of a corresponding one of said words of said set stored in said data buffer, each column of said data buffer and said directory defined by said column address having a plurality of levels;

said cache further including round robin circuit means coupled to said directory and said data buffer for generating signals to indicate a next of said levels into which replacement information is to be written, said round robin circuit means including:

a plurality of random access memory (RAM) circuits for storing n bits of information for each n^{th} power of 2 number of levels in each of said column addresses of said RAM circuits, said bits of information being coded to indicate the next level of said column address into which replacement information is to be written, said circuits include output circuit means for receiving signals from said RAM circuits during a replacement operation;

an encoder coupled to said output circuit means, said RAM circuits responsive to said column address to provide said stored bits of information to said encoder, said encoder providing loading signals having a value determined by said output circuit means for writing said replacement information into the next level of said column address of said directory and said data buffer on a first in/first out basis; and,

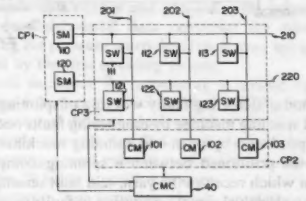
a counter coupled to said encoder and to said RAM circuits to increment by one said encoder output and store an incremented count in said column address of said RAM circuits for enabling the storing of information corresponding to said replacement information in the location of said data buffer identical of that stored in main memory during said replacement operation.

4,195,344

COMPUTER SYSTEM WITH A CONFIGURATION MONITOR

Isamu Yamazaki, Kawasaki, Japan, assignor to The President of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Apr. 4, 1978, Ser. No. 893,407
Claims priority, application Japan, Apr. 8, 1977, 52/39411
Int. Cl.[2] G06F *15/16, 15/20*
U.S. Cl. 364—200 6 Claims



1. A computer system comprising:

a plurality of information processing modules which are provided in at least first and second configuration points, each of said information processing modules having an identification number;

a plurality of switching modules provided in a third configuration point, each switching module having a configuration point (CP) number;

a configuration monitoring center for at least monitoring connecting conditions between said switching modules and the configuration monitoring center;

a source of timing signals included within the monitoring center;

timing signal lines coupled to said information processing modules and to said switching modules for delivering said timing signals from said configuration monitoring center to inquire about conditions of said information processing modules and switching modules in said first to third configuration points;

status lines coupling said information processing modules and switching modules to said configuration monitoring center for delivering response signals representing the conditions and identification numbers of said information processing modules and configuration point numbers of the switching modules in said first and second configuration points and said third configuration point to said configuration monitoring center;

status distribution lines coupled between said information processing modules and said switching modules for transferring said response signals from said information processing modules in said first and second configuration points to said switching modules in said third configuration point;

said switching modules in said third configuration point each including means responsive to said timing signals for delivering a combination of response signals from said information processing modules in said first and second configuration points to said configuration monitoring center by way of said status lines.

4,195,345
METHOD AND APPARATUS FOR DETECTING THE FAULTY WORKING OF SPINNING UNITS OF OPEN-END SPINNING MACHINES

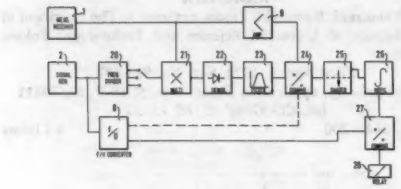
Peter Artzt, Pfullingen; Gerhard Egbers; Rolf Guse, both of Reutlingen, and Sohrab Tabibi, Pfullingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Feb. 11, 1977, Ser. No. 767,997

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605737

Int. Cl.[2] D01H *13/22*; G06F *15/46*

U.S. Cl. 364—470 **19 Claims**



1. A method of detecting faulty working of spinning units of an open-end spinning machine by monitoring faults occuring in yarn being produced by open-end spinning machines, a fault sensing device positioned between a spinning compartment and a bobbin which receives the yarn, said fault sensing device generating an electrical signal responsive to faults occurring in said yarn, said method comprising the following steps:

(a) generating a signal of predetermined frequency corresponding to the speed of delivery of said yarn from open-end spinning machine,

(b) electrically multiplying said signal generated by said fault sensing device by said signal of predetermined frequency for generating a differential-frequency signal,

(c) filtering and shaping said differential-frequency signal, and

(d) integrating and comparing said filtered and shaped signal with a preset threshold value for producing a signal indicating faulty working of said spinning unit.

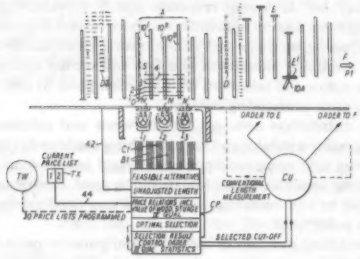
4,195,346
METHOD AND APPARATUS FOR SORTING AND CLASSIFYING TIMBER

Staffan H. Schroder, Kyrkangsvagen 9, S-802, 40 Gavle, Sweden

Continuation-in-part of Ser. No. 670,389, Mar. 25, 1976, abandoned. This application Nov. 8, 1977, Ser. No. 849,687

Int. Cl.[2] G06F *15/46*

U.S. Cl. 364—475 **11 Claims**



1. A method of cutting untrimmed pieces of lumber and sorting the cut pieces of lumber according to quality, comprising:

measuring the length of each untrimmed piece of lumber;

selecting a plurality of alternative cut-off lengths for each piece of lumber;

determining the quality value of each usable piece of lumber which would result from cutting in each of said alternative cut-off lengths;

calculating the total value of the usable piece of lumber and a cut-off waste piece resulting from cutting in each of said alternative cut-off lengths by multiplying the length of said usable and waste pieces by their respective quality value and summing each pair of said multiplications;

determining the cut-off length which produces the maximum total value of said usable and waste pieces from said untrimmed piece of lumber; and

cutting said untrimmed piece of lumber at the cut-off length which was determined to yield the maximum total value.

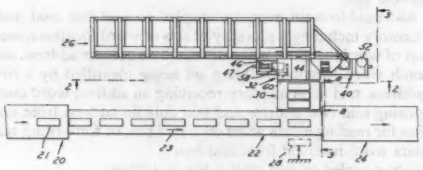
4,195,347
BUFFER APPARATUS FOR ARTICLE PROCESSING SYSTEMS

George D. MacMunn, Southfield, and Shelden M. Kavieff, Farmington Hills, both of Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Jun. 19, 1978, Ser. No. 916,823

Int. Cl.[2] G06F *15/46*; B65G *1/06*

U.S. Cl. 364—478 **17 Claims**



5. In an article storage and retrieval machine for use with a storage device having horizontal and vertical rows of storage bins arranged in a plurality of columns and levels defining a matrix of storage bins, said machine having a carriage supported for horizontal movement, a carriage drive motor, an elevator supported on the carriage for vertical movement, an elevator drive motor, an article carrying table supported on the elevator for lateral movement, and a table drive motor, the improvement comprising:

control means for operating said machine in storage and retrieval modes, said control means including programmable means for calculating control functions indicative of the column and level address of a storage bin in said storage device from a load number and the number of storage bins in one of said horizontal and vertical rows, input means responsive to the location of said carriage and said elevator relative to the columns and levels in said storage device, and comparison means for controlling the operation of said carriage and elevator drive motors in response to combinations of said control functions and signals from said input means.

4,195,348
COMBINED ELECTRONIC DIGITAL SCALE AND CALCULATOR STORING SELECTABLE PROGRAMS

Nobuyasu Kakutani, Yau, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1978, Ser. No. 880,093

Claims priority, application Japan, Feb. 22, 1977, 52-19578; Mar. 31, 1977, 52-40331[U]

Int. Cl.[2] G01B *3/08*; G06F *7/48*

U.S. Cl. 364—562 **7 Claims**

1. A small portable electronic data processing apparatus, comprising:

a housing;

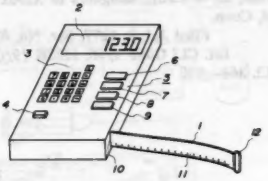
a rotary support means mounted within said housing and adapted to be rotated within said housing;

an extensible member coiled onto said support means and adapted to be pulled out from said housing;

detection means for measuring the degree of rotation of said support means thereby generating an output detection signal indicative of the extending length of said extensible member when pulled out from said housing;

counter means responsive to said output detection signal for providing a count indicative of the length of said extensible member when pulled out from said housing in accordance with said output detection signal generated by said detection means;

program storage means for storing a plurality of programs, said programs being capable of processing said count from said counter means which is representative of the length



of said extensible member when pulled out from said housing to yield a predetermined type of resultant output data;

storage means for storing said count provided by said counter means thereby resulting in the storage of preliminary measurement data;

first selection means on said housing for selecting one of said plurality of programs stored in said program storage means;

processing means responsive to an output signal from said storage means and from said program storage means for processing said preliminary measurement data stored in said storage means in accordance with said one of said plurality of programs selected by said first selection means thereby yielding said predetermined type of resultant output data; and

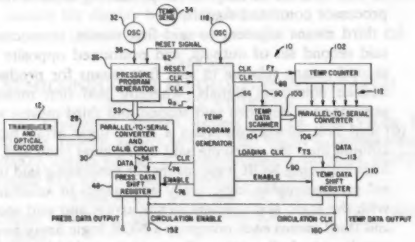
display means for displaying said resultant output data.

4,195,349

SELF CALIBRATING ENVIRONMENTAL CONDITION SENSING AND RECORDING APPARATUS

Hayati Balkanli, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Jan. 26, 1978, Ser. No. 872,530
Int. Cl.[2] E21B *47/06*; G01L *7/04*
U.S. Cl. 364—571 **20 Claims**



14. Apparatus for use in deep boreholes in the earth for sensing, digitizing and storing values of downhole pressure and temperature conditions comprising, in combination:

a pressure transducer;

an encoder coupled to the pressure transducer for producing a digital data pressure word having a plurality of data bits representative of the pressure level sensed by the pressure transducer;

a temperature transducer;

a first oscillator coupled to the temperature transducer for producing a first clock signal having a frequency which is proportional to the temperature level sensed by the temperature transducer;

a first gating generator coupled to the first oscillator for generating a series of successive enabling pulses, the duration of each enabling pulse being substantially equal to the clock cycle period of the first clock signal;

a first parallel-to-serial data converter having a first input circuit coupled to the encoder to receive the digital data pressure word and having a second input circuit coupled to the first gate generator for receiving the successive enabling pulses, and having an output circuit for conducting the pressure word data bits serially during the successive gate intervals;

a first serial data storage unit coupled to the output circuit of the parallel-to-serial data converter for receiving and storing the pressure word data bits as they are sequentially gated by the first counting circuit;

a second oscillator for generating a second clock signal having a frequency which is substantially greater than the frequency of the first clock signal;

an N-cycle counter coupled to the second oscillator for generating a reset pulse in response to a count of N clock cycles, N being a positive integer;

a temperature data counting circuit coupled to the second oscillator for generating a temperature data word having a plurality of data bits representative of its count during a temperature data counting cycle;

a second gating generator for generating a series of successive enabling pulses;

a second parallel-to-serial data converter having a first input circuit coupled to the temperature data counting circuit for receiving the temperature data bits, a second input circuit coupled to the second gate generator for receiving the successive enabling pulses, and having an output circuit for conducting the temperature data word bits serially during the successive gating intervals;

a second serial data storage unit coupled to the output circuit of the second data converter for receiving and storing the temperature data word bits as they are sequentially gated by the second gating generator; and,

control circuitry logically interconnecting the first and second gating generators, N-cycle counter, temperature data counting circuit, and first and second serial data storage units for enabling the N-cycle counter simultaneously with the gating of the first data bit of the pressure word, enabling the temperature data counting circuit simultaneously with the gating of the last data bit of the pressure word, disabling the temperature data counting circuit in response to the reset pulse produced by the N-cycle counter, and enabling the first and second serial data storage units for loading the pressure and temperature data words, respectively, in response to the reset pulse produced by the N-cycle counter.

4,195,350

METHOD AND APPARATUS FOR ELIMINATING DEADBAND IN DIGITAL RECURSIVE FILTERS

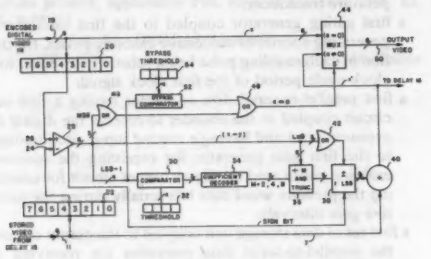
James K. Moore, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,977
Int. Cl.[2] G06F *7/38*
U.S. Cl. 364—724 **4 Claims**

1. Method of providing a digital recursive filter free of the deadband effects that would otherwise result from rounding of the product resulting from fractional multiplication of a num-

ber representing the difference between the input to the filter and the time-delayed output from the filter, wherein said product is represented by a digital word containing a plurality of digits, which word may have either positive or negative sense and which should eventually go to zero, comprising the steps of:

(a) truncating to the next lower digit at the cycling frequency of the filter the absolute value of the product-



representing word by dropping n least significant digits where R^{-n} is the value of the multiplier in radix R,

(b) if any of the dropped n least significant digits has a non-zero value adding to the absolute value of the truncated digital word a least significant "one", while retaining the sign of the pretruncated word, and

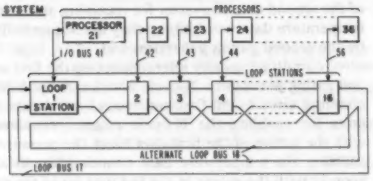
(c) repeating steps (a) and (b) at the cycling frequency of the filter until the value of the difference between the input to the filter and the output from the filter becomes zero.

4,195,351

LOOP CONFIGURED DATA TRANSMISSION SYSTEM

Robert P. Barner, Rockville, Md.; Anne M. Gulick, Carmel; John A. deVeer, Millbrook, both of N.Y., and Jan G. Oblonsky, Brookeville, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 27, 1978, Ser. No. 872,853
Int. Cl.[2] G06F *15/16*
U.S. Cl. 364—900 **11 Claims**



1. A communication system comprising:

multiple stations connected in a masterless mode by a plurality of parallel data lines and a single clock line in a closed loop unidirectional configuration;

data transmission means at each of said stations for transmission of data to another one of said stations over said data lines;

a clock generator at each of said stations to generate clock pulses for transmission to the succeeding station over said clock line; the input to said clock generator connected to said clock line for receiving clock pulses from the preceding station, whereupon each of the clock pulses generated by said clock generator is synchronized to an input clock pulse received from said preceding station;

data detection means associated with each of said stations for detecting the presence of data on any of said data lines at the input end of each of said stations, and for generating a signal during each of said clock pulses in which data is not present on any of said data lines;

gate means at each of said stations operated by a respective station data detection means signal for gating the transmission of data from the output end of the respective station onto said closed loop;

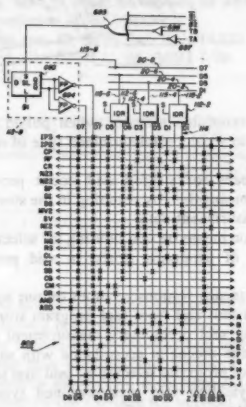
whereby data transmission from any one of said stations onto said closed loop can be effected by operation of said gate means during the first clock pulse immediately following a clock pulse in which data was not detected on any of said data lines at the input end of the station.

4,195,352

SPLIT PROGRAMMABLE LOGIC ARRAY

George K. Tu, Rolling Hills; George E. Mager; Lamar T. Baker, both of Manhattan Beach, and Robert E. Markle, Palos Verdes, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 8, 1977, Ser. No. 814,054
Int. Cl.[2] G06F *9/00*; H03K *19/08, 19/34*
U.S. Cl. 364—900 **4 Claims**



1. In a microprocessor being suitable for executing through command signals a plurality of instructions stored in a memory in accordance with a plurality of machine cycles, each of said instructions including an operational code, a programmable logic array comprising:

(a) first means responsive to said operational code of the instruction being executed for producing a number of internal programmable logic array commands at first and second sets of outputs;

(b) second means adjacent to said first means and connected to said first set of outputs for producing desired microprocessor command signals;

(c) third means adjacent to said first means, connected to said second set of outputs, and positioned opposite said second means relative to said first means for producing desired command signals, whereby said first means is positioned in between said second and third means; and

(d) said first means comprises a NOR logic array having column lines for receiving said operational code and row lines including NOR logic means for generating said internal programmable logic array commands in accordance with the logic arrangement of the array; and said second and third means each comprise a NOR logic array having row lines including means for receiving said internal programmable logic array commands and column lines including NOR logic means for generating said microprocessor command signals in accordance with the logic arrangement of the array.

4,195,353
WORD PROCESSOR COMPRISING IMPROVED EDITING MEANS

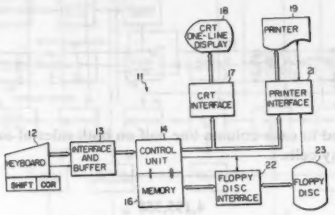
Shintaro Abe, and Tomoyuki Haganuma, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 5, 1978, Ser. No. 867,284

Claims priority, application Japan, Jan. 14, 1977, 52/3155; Apr. 18, 1977, 52/44390; Apr. 18, 1977, 52/44391; Apr. 19, 1977, 52/44706; Apr. 19, 1977, 52/44708

Int. Cl.[2] G06F *3/02, 3/12, 3/14*

U.S. Cl. 364—900 **19 Claims**



1. A word processor comprising;

an input keyboard;

a memory for storing data input from the keyboard;

a display unit for displaying one line of data from the memory;

a printer for printing the line of data;

a display buffer for storing the line of data for display by the display unit;

a print buffer for storing the line of data for printing by the printer;

control means for decoding data transmitted from the memory to the display buffer and causing the line of data to be transmitted from the memory to the print buffer for printing in response to a predetermined data code;

mass storage means;

interface means for transmitting data between the memory and the mass storage means, the control means causing the line of data to be transmitted from the memory to the mass storage means in response to the predetermined data code; and

editing means for dividing the memory into first and second sections and transmitting the line of data from the mass storage means to the second section of the memory for editing;

the keyboard having a key which, when depressed, causes the control means to serially transfer data from the second section to the first section of the memory, data entered from the keyboard being serially added to data in the first section, the data in the first section being transmitted to the display buffer followed by the data in the second section for display by the display unit.

4,195,354
SEMICONDUCTOR MATRIX FOR INTEGRATED READ-ONLY STORAGE

Jury V. Kruzhanov, 103498, korpus 431, kv. 112; Viktor P. Dubinin, 103498, korpus 445, kv. 120; Viktor S. Ovchinnikov, 103527, korpus 839, kv. 11, and Vladimir E. Safronov, 103527, korpus 811, kv. 146, all of Moscow, U.S.S.R.

Filed Aug. 7, 1978, Ser. No. 931,422

Claims priority, application U.S.S.R., Aug. 16, 1977, 2517209[1]

Int. Cl.[2] G11C *11/36*

U.S. Cl. 365—105 **1 Claim**

1. A semiconductor matrix for an integrated read-only storage, comprising:

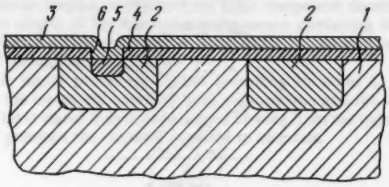
a substrate;

semiconductor buses of a first type conductivity, formed in said substrate;

metallic buses arranged in an intersection relationship to said semiconductor buses of said first type conductivity;

a dielectric layer having said metallic buses disposed thereon and adapted to isolate said semiconductor buses from said metallic buses;

a plurality of components of said matrix, formed at the locations where said semiconductor buses of said first type conductivity intersect said metallic buses and implemented on the basis of a semiconductor region of said first



type conductivity, only some components of said components therein having a second type conductivity; and

windows formed in said dielectric layer above said second type conductivity semiconductor regions of said some components and comprising openings registered with said windows so that the area of p-n junction between the second type conductivity semiconductor region and the first type conductivity semiconductor region as well as the capacitance of said p-n junction are reduced, thereby providing increased integration and speed of operation of the integrated read-only storage.

4,195,355
PROCESS FOR MANUFACTURING A FERROELECTRIC DEVICE AND DEVICES MANUFACTURED THEREBY

George A. Rohrer, Sault Ste. Marie, Mich., assignor to Technovation, Inc., Sault Ste. Marie, Mich.

Continuation-in-part of Ser. No. 316,417, Dec. 18, 1972, Pat. No. 3,939,292, which is a continuation-in-part of Ser. No. 76,059, Sep. 28, 1970, Pat. No. 3,728,694. This application Feb. 17, 1976, Ser. No. 658,199

Int. Cl.[2] G11C *11/22*; B05D *5/12*

U.S. Cl. 365—145 **18 Claims**

1. A process for manufacturing a ferroelectric device, comprising the steps of:

forming a first electrical contact;

forming, by vapor deposition performed in a vacuum at a pressure no greater than 1×10^{-5} Torr and at a temperature of from about 390° C. to 440° C., a stable thin film of potassium nitrate over at least a portion of said first electrical contact;

relieving said vacuum to a pressure of approximately one atmosphere with a dry predetermined gas for a first predetermined period of time;

reapplying said vacuum;

forming a second electrical contact over at least a portion of said stable thin film of potassium nitrate;

vacuum depositing a covering of silicon monoxide over said first electrical contact, said thin film of potassium nitrate, and said second electrical contact; and

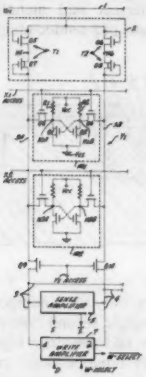
heating said first and second electrical contacts, said thin film of potassium nitrate, and said covering of silicon monoxide for a second predetermined period of time and at a predetermined temperature.

10. A ferroelectric device manufactured in accordance with the process of claim 1.

4,195,356
SENSE LINE TERMINATION CIRCUIT FOR SEMICONDUCTOR MEMORY SYSTEMS

Timothy R. O'Connell, and George S. Leach, both of Phoenix, Ariz., assignors to Electronic Memories and Magnetics Corporation, Encino, Calif.

Filed Nov. 16, 1978, Ser. No. 961,240
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—189 **17 Claims**



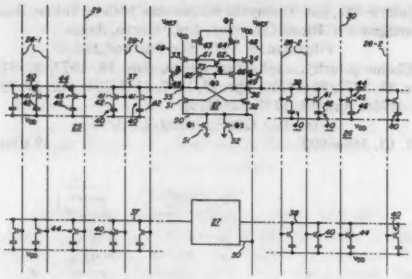
1. A semiconductor memory system comprising:
a plurality of memory cells, each memory cell having a 1st memory node having a high or low voltage value in accordance with the state of the memory cell;
a 1st sense line for said plurality of memory cells, said 1st sense line being selectively coupleable to a 1st memory node of a selected one of said plurality of memory cells, each 1st memory node at its low voltage value being capable when coupled to said 1st sense line of pulling said 1st sense line to a corresponding low voltage value;
a supply bus of relatively high pull-up voltage;
a 1st sense line termination circuit interconnected between said 1st sense line and said supply bus of relatively high pull-up voltage for pulling said 1st sense line toward a predetermined intermediate voltage value when no 1st memory node at a low voltage value is coupled to said 1st sense line, and for permitting said 1st sense line to be pulled down to a low voltage value when a 1st memory node at a low voltage value is coupled thereto;
said 1st sense line termination circuit comprising a 1st enhancement mode FET device and a 1st depletion mode FET device connected in series with each other and between said 1st sense line and said bus of relatively high voltage, the source of one FET device being connected to said 1st sense line and the drain of the other FET device being connected to said supply bus, said 1st enhancement mode FET device having its drain and gate interconnected.

4,195,357
MEDIAN SPACED DUMMY CELL LAYOUT FOR MOS RANDOM ACCESS MEMORY

Chang-Kiang Kuo, Houston, and Shyh-Chang Tsaur, Stafford, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1978, Ser. No. 915,632
Int. Cl.[2] G11C *7/00*
U.S. Cl. 365—210 **6 Claims**

1. In a memory system of the type having array of rows and columns of memory cells, a sense amplifier positioned at the center of each column line, and a pair of rows of dummy cells including a dummy cell connected to each half of each column line, the improvement wherein each row of dummy cells is positioned at a median position between the ends of each half of each column line, a plurality of said memory cells being

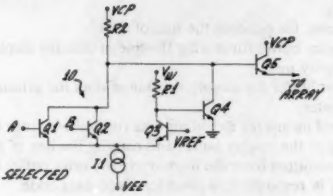


connected to each column line half on both sides of each row of dummy cells.

4,195,358
DECODER FOR A PROM

Raymond C. Yuen, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 26, 1978, Ser. No. 973,175
Int. Cl.[2] G11C *8/00, 17/00*
U.S. Cl. 365—230 **10 Claims**



7. A circuit for programming a PROM comprising
a gate whose output corresponds to a NOR truth table,
a control gain element connected to the output of said gate and connected between a high voltage source and a reference voltage source,
an additional gain element connected to said high voltage source and to the PROM and responsive to the condition of said control gain element.

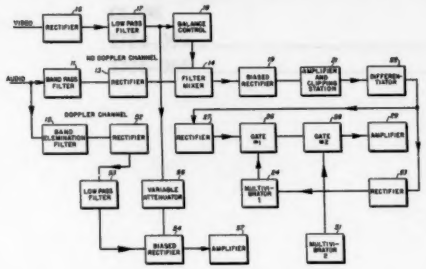
4,195,359
AUTOMATIC ECHO DETECTION AND CLASSIFICATION SYSTEM

Paul H. Miller, 1400 S. Joyce St., Apt. B-1709, Arlington, Va. 22202, and Tillman H. Schafer, 509 Shady Dr., Endwell, N.Y. 13760

Filed Jun. 28, 1954, Ser. No. 439,941
Int. Cl.[2] G01S *9/66*
U.S. Cl. 367—94 **2 Claims**

1. In an automatic echo detection and classification system wherein sonar equipment transmits pulses toward a target in predetermined and equal time intervals and receives background, dopplered and undopplered echoes which are produced as video output and audio output, the improvement which comprises means for establishing a non-directional background reference signal voltage from the video output, means for separating the audio output into dopplered signal voltage outside the reverberation band and undopplered signal voltage within the reverberation band, means for algebraically adding the background reference signal voltage to both the dopplered and undopplered signal voltages, a first amplifier for the resultant dopplered signal voltage, a target indicator alarm, a first

energizing circuit therefor operative by the amplified dopplered signal voltage to indicate that a target has been located, means for obtaining from the resultant undopplered signal voltage a selected signal voltage above a predetermined level, a first gate normally in closed position, a first multivibrator therefor and operable by the selected undopplered signal voltage to move to open position for a predetermined interval to pass a first echo of a predetermined duration, a second gate normally in open position for passing the first echo after it has passed the first gate, a second multivibrator for the second gate operative to close the second gate for a predetermined period,



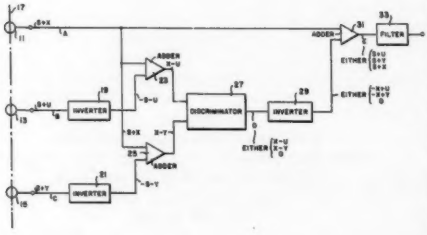
an amplifier for the undopplered signal voltage of the first echo after it has passed through both the first and second gates, a second energizing circuit for the target alarm, said second circuit including the second multivibrator, and being operative to energize the second multivibrator by the amplified undopplered signal voltage of the first echo after it has passed through the second gate and after the predetermined period for which the second gate is closed and a second echo appears, which is substantially within the same range as the first echo, the second gate will be open for passing of the second echo to operate the target indicator alarm.

4,195,360

SIGNAL PROCESSING CIRCUIT

Noel O. Fothergill, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Oct. 16, 1973, Ser. No. 408,969
Int. Cl.[2] H04B *1/12*
U.S. Cl. 367—136 **12 Claims**



1. A signal processing circuit particularly adapted for use in the detection of a selected signal against background noise, comprising:

separate inputs which comprise at least first, second and third inputs which provide respectively the selected signal plus a first noise signal, the selected signal plus a second noise signal, and the selected signal plus a third noise signal, the three noise signals being uncorrelated;

first combining means arranged to produce from the first and second inputs a fourth signal from which the selected signal has been eliminated and which comprises the difference between the first and second noise signals;

second combining means arranged to produce from the second and third inputs a fifth signal from which the selected signal has been eliminated and which comprises the difference between the second and third noise signals;

means arranged to compare the fourth and fifth signals, and when said signals are of the same polarity to select the signal which has an instantaneous value closer to zero, and to present that signal as an instantaneous intermediate output;

means arranged to compare the fourth and fifth signals, and when the two signals are of opposite polarity, to present zero as the said instantaneous intermediate output; and

third combining means by which a selected one of the said inputs is combined with the said intermediate output in a manner tending to eliminate the noise component therein, the output of the third combining means containing the selected signal with a higher signal-to-noise ratio than any of the incoming signals.

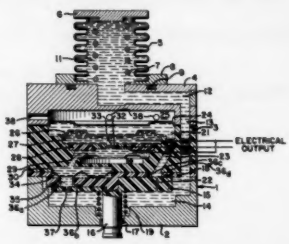
11. A signal processing circuit according to claim **1**, in which the inputs are obtained from microphones and the selected input signal is an acoustic signal coming from the object whose presence the circuit is required to ascertain.

4,195,361

VARIABLE FREQUENCY ACOUSTIC FILTER

Herbert V. Hillery, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1956, Ser. No. 581,261
Int. Cl.[2] H04R *23/00*
U.S. Cl. 367—149 **6 Claims**



1. In a hydroacoustic filter and electrolytic detector system of the character described, means for providing a housing for a unitary assembly of an electrolytic detector and a hydroacoustic filter circuit of selectable frequency attenuation characteristic to provide a plurality of band pass ranges for said system, which comprises an electrolytic detector cell, a first acoustic capacitance means connected in series with a first side of the input of said circuit, a second series connected acoustic capacitance connected in a second signal input side of said circuit, switching means providing a first plurality of hydraulic inductance-resistance tubes, with a preselected one of said plurality of tubes being normally disposed in a position to provide a shunting of the remainder of the hydroacoustic filter and electrolytic detector system, said switching means further including means providing a second plurality of hydraulic inductance-resistance tube members disposed for selective connection of a predetermined one thereof in series with said first named input capacitance and contemparaneously with a predetermining one of said first tubes, means for selecting one each of said plurality of series and shunt tubes to provide in conjunction with the other filter elements preselected signal attenuation in a desired frequency range, means providing a third acoustic capacitance in series with said series inductance-resistance tube, a fourth capacitance means providing a shunting of the signal output of said third capacitance around said detector cell, means providing a fluid connection of said detector cell, and means for deriving an output of predetermined frequency characteristics from said detector.

DESIGN PATENTS

GRANTED MAR. 25, 1980

ERRATA

For CLASS	See PATENT NO.
D24–099	254,552
D26–066	254,575

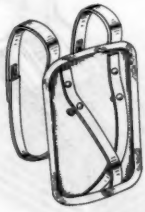
DESIGNS

MARCH 25, 1980

254,516
CANDY TABLET
Raymond K. Meibaum, Florissant, Mo., assignor to Sunmark, Inc., St. Louis, Mo.
Filed Apr. 27, 1978, Ser. No. 901,283
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—1

254,517
BRASSIERE
John C. Henson, Greenville, Tex., assignor to Henson-Kickernick,Inc., Greenville, Tex.
Filed Oct. 20, 1977, Ser. No. 843,806
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

254,518
CHILD'S CHEST OR BACK TOTE
Paula Taggart, 4123 Tracy St., Los Angeles, Calif. 90027
Filed Jun. 17, 1977, Ser. No. 807,423
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—25



254,519
VEST
Ernest W. Kramer, Minneapolis, Minn., and Don W. Dunlap, Topeka, Kans., assignors to Medical Associates International, Inc., Topeka, Kans.
Filed Jan. 30, 1978, Ser. No. 873,213
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190

254,520
VISION SHIELD FOR A STUDENT TYPIST OR THE LIKE
Gerald A. Amirault, 693 Portsmouth Ave., Kingston, Ontario, Canada
Filed Dec. 16, 1977, Ser. No. 861,352
Claims priority, application Canada, Nov. 3, 1977, 0311772
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—234

254,521
SANDAL
Marcella M. Katz, 10573 Le Conte Ave., Los Angeles, Calif. 90024, assignor to Marcella M. Katz, Los Angeles, Calif.
Filed Jul. 11, 1977, Ser. No. 814,783
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270

254,522

BELT BUCKLE

John Moreton, Windsor, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Dec. 15, 1977, Ser. No. 861,073

Term of patent 14 years

Int. Cl. D02—*07*

U.S. Cl. D2—427

254,523

BELT BUCKLE

Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckles & Jewelry, Inc., Los Angeles, Calif.

Filed Oct. 28, 1977, Ser. No. 846,618

Term of patent 14 years

Int. Cl. D02—*07*

U.S. Cl. D2—431

254,524

CARRYING CARTON FOR SHOES OR THE LIKE

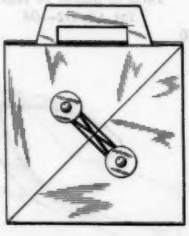
William J. Cohen, Hingham, Mass., assignor to CITC Industries, Inc., New York, N.Y.

Division of Ser. No. 651,957, Jan. 23, 1976, Pat. No. Des. 248,123. This application Oct. 26, 1977, Ser. No. 845,622

Term of patent 14 years

Int. Cl. D3—*02*

U.S. Cl. D3—30



254,525

LUGGAGE CASE

Michael Davis, Meschanic Township, Lawrence County, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Sep. 7, 1977, Ser. No. 831,356

Term of patent 14 years

Int. Cl. D3—*01*

U.S. Cl. D3—71

254,526

CARD FILE DRAWER

Gary A. Dolphin, Sr.; James F. Hampshire, and Greg P. Terek, all of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

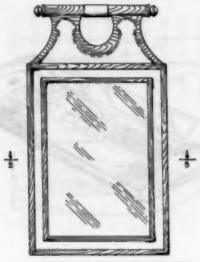
Filed Dec. 1, 1977, Ser. No. 856,323

Term of patent 14 years

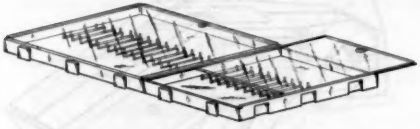
Int. Cl. D6—*06*

U.S. Cl. D6—191

254,527
MIRROR FRAME OR THE LIKE
John Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,193
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—241

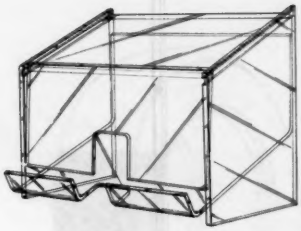


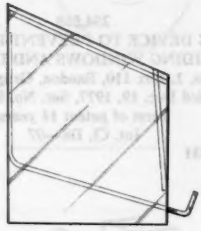
254,528
SET OF MODULAR DISPLAY CASES FOR WRITING IMPLEMENTS
Louis Reichman, 111 Audley St., Kew Gardens, N.Y. 11415
Filed Jun. 6, 1977, Ser. No. 804,101
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—157



254,529
COMBINED CUTTING BOARD AND COLANDER
Philip J. Arnoff, Lyndhurst, Ohio, assignor to Transco Plastics Corporation, Cleveland, Ohio
Filed May 9, 1977, Ser. No. 794,970
Term of patent 14 years
Int. Cl. D7—*04, 05*
U.S. Cl. D7—46

254,530
STRAW DISPENSER
Douglas Armstrong, 1420 Warden Ave., Scarborough, Ontario, Canada
Filed Sep. 26, 1977, Ser. No. 836,915
Claims priority, application Canada, May 12, 1977, 1205773
Term of patent 7 years
Int. Cl. D07—*06*
U.S. Cl. D7—75

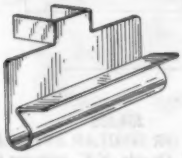




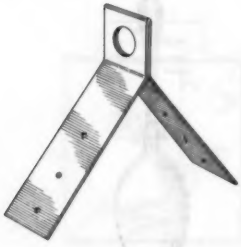
254,531
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 27, 1977, Ser. No. 865,010
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

254,532
WRENCH
Eugene M. Kelley, 1796 Larkspur, Pomona, Calif. 91766
Filed Jun. 10, 1977, Ser. No. 805,617
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—29

254,533
LOCKING DEVICE TO PREVENT REMOVAL OF SLIDING WINDOWS AND DOORS
Alfred Gist, Rte. 1, Box 110, Bandon, Oreg. 97411
Filed Dec. 19, 1977, Ser. No. 861,657
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331

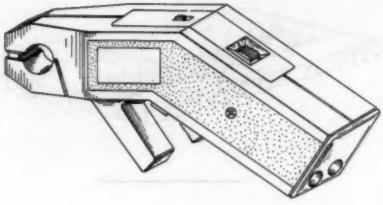


254,534
ROOFING SAFETY BRACKET
John H. Glynn, 7 Richgrove Dr., Apt. 1006, Weston, Ontario M9R 2L1, Canada, and Patrick J. Glynn, 21 Richgrove Dr., Apt. 712, Weston, Ontario M9R 2L2, Canada
Filed Mar. 20, 1978, Ser. No. 888,035
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



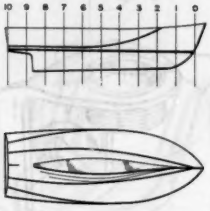
254,535
COMBINED TIME CLOCK AND BIORHYTHM CALCULATOR
Ian S. McCrae, Atlanta, Ga., assignor to Kosmos International Ltd., Nassau, The Bahamas
Filed Feb. 1, 1978, Ser. No. 874,269
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2

254,536
GUN FOR DETERMINING CURRENT OR POWER IN AN ELECTRICAL CONDUCTOR
Wesley B. Davis, Canal Winchester, and Jeffrey A. Dierker, Westerville, both of Ohio, assignors to F. W. Bell, Inc., Columbus, Ohio
Filed Nov. 16, 1977, Ser. No. 852,177
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—79

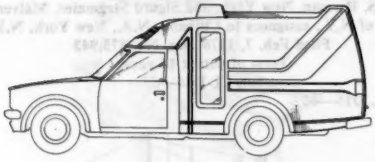


254,537
DOUBLE RING
Mildred Abelson, 15 Sycamore La., Roslyn Heights, N.Y. 11577
Filed Jul. 14, 1978, Ser. No. 924,899
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34

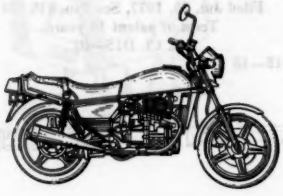
254,538
BOAT HULL
George A. Lundgren, 6225 Heights Rd., Santa Rosa, Calif. 95404
Filed Jan. 24, 1977, Ser. No. 761,999
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



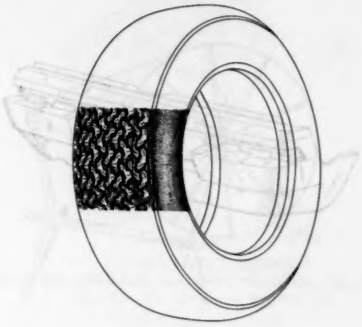
254,539
VAN
Wayne M. Mertes, Sun Valley, Calif., assignor to Dolphin Camper Company, Sun Valley, Calif.
Filed Feb. 6, 1978, Ser. No. 875,629
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—99



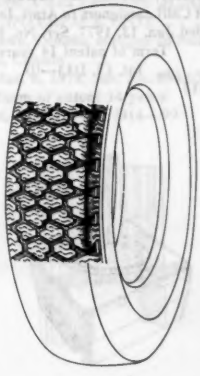
254,540
MOTORCYCLE
Einosuke Miyachi, Urawa, and Tsutomu Okuno, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1978, Ser. No. 885,028
Claims priority, application Japan, Sep. 13, 1977, 52-36532
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



254,541
TIRE
Michael A. Kolowski, Tallmadge; Daniel J. Lindner, North Canton; John E. Lynch, Bedford, and Charles W. Roberts, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 14, 1978, Ser. No. 877,649
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



254,542
TIRE
Leon J. Hitzky, Bonneweg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 12, 1978, Ser. No. 950,932
Claims priority, application United Kingdom, Apr. 28, 1978, 984420/78
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151

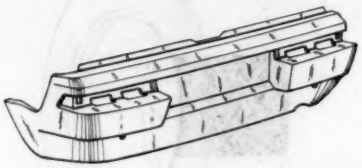


254,543

VEHICLE BODY REAR BUMPER UNIT

Giorgio Margiaria, Moncalieri, and Francesco Gay, Turin, both of Italy, assignors to Comind S.p.A. and Fiat Societa per Azioni, both of Turin, Italy

Filed Jan. 4, 1978, Ser. No. 866,895
Claims priority, application Italy, Jul. 5, 1977, 53307 B/77
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169



254,544

VIDEO GAME CONTROL UNIT

Kevin P. McKinsey, Soquel, and Gerald R. Aamoth, Santa Clara, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

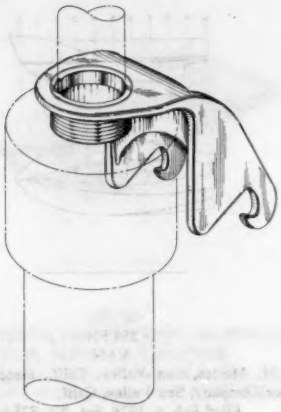
Filed Jun. 13, 1977, Ser. No. 806,318
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12

254,545

HIGH VOLTAGE FUSE END FITTING

David M. Evans, Palatine, and Henry W. Scherer, Mount Prospect, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Sep. 27, 1977, Ser. No. 837,239
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—35

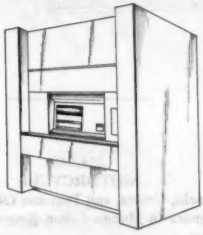


254,546

CUSTOMER ACTIVATED TERMINAL ENCLOSURE

James S. Berman, New York, and Sigurd Stegmaier, Malverne, both of N.Y., assignors to Citibank, N.A., New York, N.Y.

Filed Feb. 7, 1978, Ser. No. 875,943
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42

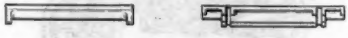


254,547

LAWN MOWER HAND GRIP

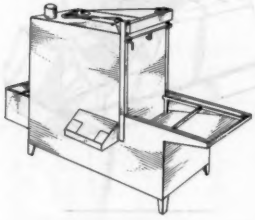
Lee L. Karsten, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Jul. 25, 1977, Ser. No. 818,558
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—18

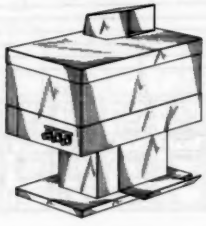


254,548
HYDRAULIC HOSE GUARD FOR USE WITH EXCAVATING MACHINES OR THE LIKE
Allyn C. Dowd, Sterling Heights, and Miles N. Stiller, West Bloomfield, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Jul. 21, 1977, Ser. No. 817,644
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—28

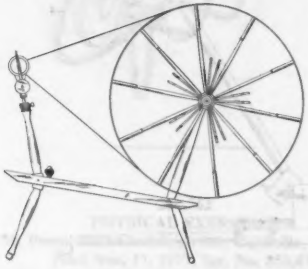
254,549
PARTS CLEANING AND DE-GREASING MACHINE
Richard W. Gentry, 8192 Tokay, Fontana, Calif. 92335
Filed Jun. 10, 1977, Ser. No. 805,616
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—34



254,550
AUTOMATIC TOWEL RINSING MACHINE
Judson L. Smith, 5432 Lighthouse La., Tempe, Ariz. 85283
Filed Sep. 12, 1977, Ser. No. 832,512
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—39



254,551
SPINNING WHEEL
Luis A. Turner, 8406 SW. 58th Ave., Portland, Oreg. 97219
Filed Jun. 10, 1977, Ser. No. 805,620
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—66



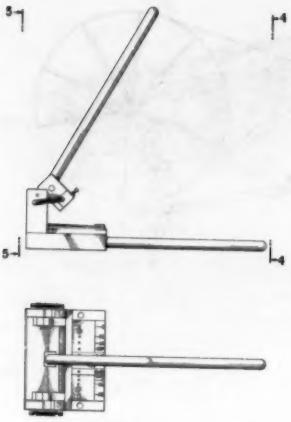
254,552
ENCLOSURE FOR A TELEPHONE JUMPER-WIRE INTERFACE UNIT
John A. Mahan, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Mar. 6, 1978, Ser. No. 884,036
Term of patent 14 years
Int. Cl. D13—*03;* D14—*99*
U.S. Cl. D24—99

254,553

MULTI-CONTACT ELECTRICAL CONNECTOR FIXTURE PRESS

Philip J. Thomas, Costa Mesa; Roger D. Lang, Irvine, and John A. McAllister, Mission Viejo, all of Calif., assignors to Circuit Assembly Corp., Costa Mesa, Calif.

Filed May 9, 1977, Ser. No. 794,765
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—123



254,554

FOLDING KEYBOARD PAD

Donald M. Genaro, Haworth; Rembert R. Stokes, Middletown, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 23, 1978, Ser. No. 889,611
Term of patent 14 years
Int. Cl. D18—*01;* D14—*02, 03*
U.S. Cl. D18—12

254,555

MIXING PALETTE

Wallace R. Kean, 2454 Sharon Oaks Dr., Menlo Park, Calif. 94025, and Melvin R. Rouse, 3401 Investment Blvd., No. 7, Hayward, Calif. 94545

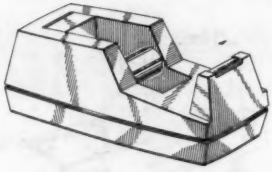
Filed Jun. 14, 1977, Ser. No. 806,557
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—35

254,556

TAPE DISPENSER

Logan W. Johnson, Edina, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jul. 24, 1978, Ser. No. 927,116
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—69

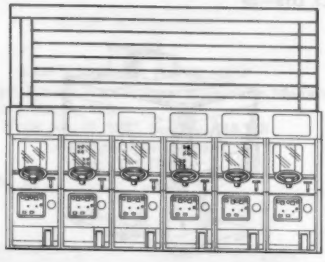


254,557

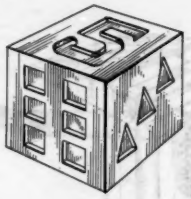
COIN-OPERATED AUTO RACE AMUSEMENT DEVICE

Richard A. Nunis, Laguna Beach, Calif., assignor to Walt Disney Productions, Burbank, Calif.

Filed Oct. 3, 1977, Ser. No. 839,284
Term of patent 14 years
Int Cl. D21-01
U.S. Cl. D21-01

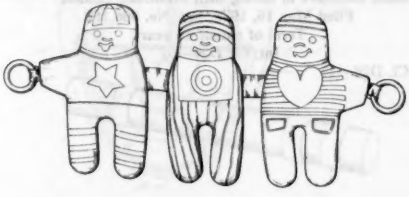


254,558
GAME DIE
James A. Rice, 6 Hamilton Rd., Brookline, Mass. 02146
Filed Aug. 29, 1977, Ser. No. 828,880
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



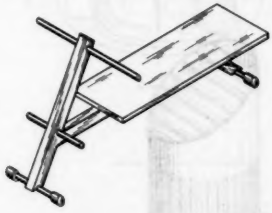
254,559
DART
John F. Chmela, 1106 Beechwood Dr., Mt. Prospect, Ill. 60056
Filed Dec. 12, 1977, Ser. No. 859,663
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—49

254,560
CRIB TOY OR SIMILAR ARTICLE
Phillip Johnson, Hopewell, N.J.; Lawrence Grubb, Monkton, and Danny E. Simpson, Baltimore, both of Md., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Mar. 8, 1978, Ser. No. 884,652
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—63

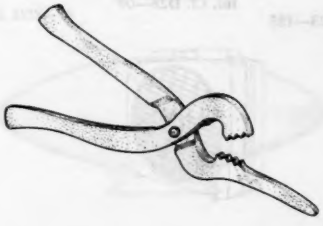


254,561
ROCKING TOY
Carl H. Alley, 2310 Murray Ave., Baltimore, Md. 21219, and Michael B. Alley, 1728 Burham Rd., Baltimore, Md. 21222
Filed Nov. 7, 1977, Ser. No. 848,824
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—68

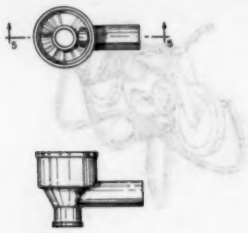
254,562
PHYSICAL EXERCISER
John M. Pearo, 3211 Castleleigh Rd., Beltsville, Md. 20705
Filed Nov. 17, 1977, Ser. No. 852,474
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



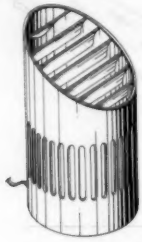
254,563
FISH GRIPPING TOOL
George F. Nihizer, 39 S. Pleasant, Fairborn, Ohio 45324
Filed Dec. 12, 1977, Ser. No. 859,657
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



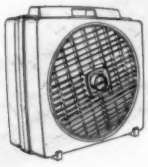
254,564
VACUUM BREAKING TEE
Robert L. Johnson, 590 - 1st. Ave. South, Seattle, Wash. 98104
Continuation-in-part of Ser. No. 798,905, May 20, 1977. This application Apr. 16, 1979, Ser. No. 30,535
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



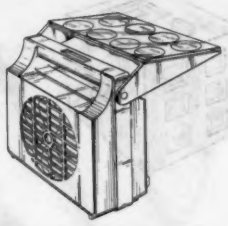
254,565
FAN
Rohn A. Brown, 1218 E. Del Rio Dr., Tempe, Ariz. 85282
Filed Nov. 21, 1977, Ser. No. 853,641
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



254,566
PORTABLE FAN HOUSING
Kevin T. Cummins, Eltham, Australia, assignor to Kemtron Operations Pty. Ltd., Australia
Filed Apr. 13, 1978, Ser. No. 896,000
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



254,567
SOLAR POWERED PORTABLE FAN
Clyde Wagner, 325 E. Stocker St., Glendale, Calif. 91207
Filed Apr. 14, 1978, Ser. No. 896,788
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155

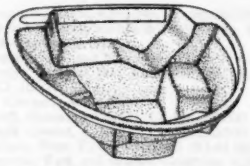


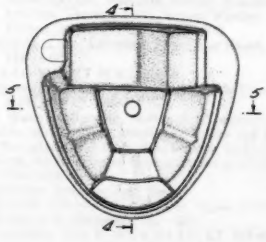
254,568
CONTAINER FOR STORAGE AND DISPENSING OF MEDICAL TEST STRIPS OR SIMILAR ARTICLE
John C. Mack, Jr., and Dean M. Peterson, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 12, 1977, Ser. No. 859,885
Term of patent 14 years
Int. Cl. D24—*01*; D10—*04*
U.S. Cl. D24—8

254,569
HOUSING FOR A PORTABLE HAND-HELD, DIGITAL, HEART RATE INDICATOR DEVICE
James G. Moffat, and Gregory Lekhtman, both of Montreal, Canada, assignors to Biosig Inc., Montreal, Canada
Filed May 16, 1978, Ser. No. 906,158
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

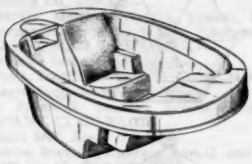
254,570
AIR TURBINE HANDPIECE
Francis J. McDonald, Needham, Mass., assignor to Healthco, Inc., Boston, Mass.
Filed Mar. 23, 1979, Ser. No. 23,038
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12

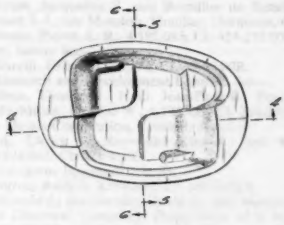
254,571
HYDROTHERAPY SPA
Richard G. Reineman, Newport Beach, Calif., assignor to Marlin Fiberglass, Huntington Beach, Calif.
Continuation-in-part of Ser. No. 005,912, Jan. 23, 1979. This application Jun. 11, 1979, Ser. No. 47,269
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38





254,572
HYDROTHERAPY SPA
Richard G. Reineman, Newport Beach, Calif., assignor to Marlin Fiberglass, Huntington Beach, Calif.
Continuation-in-part of Ser. No. 005,913, Jan. 23, 1979, abandoned. This application Jun. 11, 1979, Ser. No. 47,271
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38





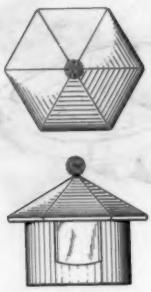
254,573
BUILDING
Robert K. S. Han, 999 Green St., No. 2701, San Francisco, Calif. 94133
Filed Aug. 16, 1978, Ser. No. 934,087
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—18

254,574

PET HOUSE

Ruth Schneider, R.D. 2, Box 21R, Hartly, Del. 19953

Filed Apr. 13, 1978, Ser. No. 896,159
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

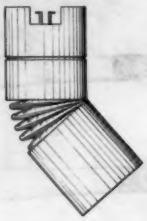


254,575

TRACK LIGHT

Joseph R. Strignano, 300 E. 56th St., New York, N.Y. 10022

Filed Jan. 30, 1978, Ser. No. 873,288
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—66



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TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MARCH, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Finsam Industries Ltd.: *See—*
Lavik, Ingvar, 4,194,367, Cl. 62-138.000.

Aaen, Olav. Snowmobile traction lug and mounting therefor. 4,194,583, Cl. 180-190.000.

AB Amals Mekaniska Verkstad: *See—*
Andreasson, Bengt A., 4,194,701, Cl. 242-58.300.

AB Scaniainventor: *See—*
Tell, Karl G.; Wall, Arne E.; and Siwersson, Olle L., 4,194,615, Cl. 198-502.000.

Abbott Laboratories: *See—*
Harms, Jack L.; and Seberg, Charles H., 4,194,504, Cl. 128-214.400.
Safford, John W., Jr., 4,195,074, Cl. 424-12.000.
Terk, Harold S., 4,195,060, Cl. 422-61.000.
Tomioka, Shinji; and Mori, Yasuki, 4,195,171, Cl. 536-17.00R.
Workman, Erwin F., Jr., 4,195,072, Cl. 424-1.000.

Abbruzzese, Luigi: *See—*
Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, 4,195,036, Cl. 260-561.0HL.

Abe, Shintaro; and Haganuma, Tomoyuki, to Ricoh Company, Ltd. Word processor comprising improved editing means. 4,195,353, Cl. 364-900.000.

Abic, Ltd.: *See—*
Simonovitch, Chaim, 4,195,087, Cl. 424-256.000.

Acco Industries Inc.: *See—*
Gilmore, William J., 4,194,786, Cl. 297-468.000.

ACF Industries, Incorporated: *See—*
Wicke, Charles H., 4,194,524, Cl. 137-240.000.

Acton, Constance F.: *See—*
Popplewell, James M.; Acton, Constance F.; and Brock, Andrew J., 4,194,928, Cl. 148-2.000.

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Advanced Coating Technology, Inc.: *See—*
Chambers, Douglas L.; and Wan, Chong T. Wan, 4,194,962, Cl. 204-298.000.

Aeg-Elotherm G.m.b.H.: *See—*
Stengel, Edgar; and Emde, Friedhelm, 4,194,728, Cl. 266-125.000.

Aeroquip Corporation: *See—*
McCracken, Donald G., 4,194,767, Cl. 285-134.000.

AES Technology Systems, Inc.: *See—*
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Afanasiev, Valery K.: *See—*
Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
Bertrand, Pierre; Jamet, Michel; Strub, Jacques; and Walter, Eric, 4,195,337, Cl. 364-106.000.

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Yamazaki, Isamu, 4,195,344, Cl. 364-200.000.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See—*
Kumata, Ken; and Namikawa, Hiroshi, 4,194,916, Cl. 106-47.00R.
Moriya, Yoshiro; Ikai, Kazuhito; and Tanaka, Makoto, 4,194,914, Cl. 106-18.140.

AGFA-Gevaert, A.G.: *See—*
Fauth, Gunter, 4,194,823, Cl. 354-150.000.
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Ferrara, Peter T., 4,194,635, Cl. 211-45.000.
Hartwig, Karl; and Waibel, Gottfried, 4,194,831, Cl. 355-3.00R.
Rapp, Heinz; Biedermann, Ernst; and Bartel, Siegfried, 4,194,836, Cl. 355-75.000.
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,194,821, Cl. 354-86.000.

AGFA-GEVAERT N.V.: *See—*
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,194,625, Cl. 206-455.000.

Agui, Wataru; Higosaki, Nobuyuki; Yamanari, Koichiro; Furukawa, Toshio; and Kuyama, Hiroshi, to Rohm and Haas Company. Granular flocculants and their manufacture. 4,195,028, Cl. 260-42.430.

Ahlstrom, Allan. Control mechanism for a vending machine. 4,194,612, Cl. 194-4.00R.

Air Pollution Systems, Inc.: *See—*
Schwab, James J.; and Cooper, Jacob, 4,194,888, Cl. 55-2.000.

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Arencibia, Jose P., Jr., 4,194,570, Cl. 169-46.000.

Airco, Inc.: *See—*
Layden, Lawrence M.; and Thomson, James R., 4,194,727, Cl. 266-58.000.
Otto, Carl W., 4,195,098, Cl. 426-513.000.

Aisan Industry Co., Ltd: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.

Akebono Brake Industry Co. Ltd.: *See—*
Maehara, Toshifumi, 4,194,792, Cl. 303-24.00F.

Aktiebolaget Hagglund & Soner: *See—*
Falk, Alfons B.; Stenman, Antero E.; and Wikland, Svante, 4,194,761, Cl. 280-705.000.

Aktiebolaget SKF: *See—*
Svensson, Bengt H.; Lindberg, Lars G.; and Hallstedt, Karl G. A., 4,194,796, Cl. 308-9.000.

Aktieselskabet de Danske Sukkerfabrikker: *See—*
Madsen, Rud F., 4,194,557, Cl. 165-94.000.

Akyurek, Altan, to BBC Brown Boveri & Company Limited. Apparatus for aligning and soldering multiple electrode pedestals to the solderable ohmic contacts of semiconductor components. 4,194,668, Cl. 228-6.00A.

Alban, Claude M.: *See—*
Thery, Jean P.; Alban, Claude M.; and Jordi, Albert P., 4,194,572, Cl. 169-66.000.

Albert Rolland S.A.: *See—*
Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., 4,195,093, Cl. 424-275.000.

Albertini, Sauro: *See—*
Taffurelli, Felice, 4,194,272, Cl. 24-90.00R.

Alcan Research and Development Limited: *See—*
Hudson, Thomas J.; Huni, Jean-Paul R.; Potocnik, Vinko; and MacMillan, Donald W., 4,194,959, Cl. 204-243.00R.

Alforge Metals Corporation, Limited: *See—*
Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., 4,194,667, Cl. 228-4.100.

Alfred Lovgrens Byggnads Ab: *See—*
Lovgren, Anders, 4,194,549, Cl. 160-84.00R.

Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., to Nalco Chemical Company. Preparation of a $MgCl_2$ solution for Nalco's $MgCl_2$ process from $MgSO_4$ and other $MgSO_4$ salts. 4,195,070, Cl. 423-498.000.

Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., to Nalco Chemical Company. Polyethers to obtain anhydrous magnesium chloride. 4,195,071, Cl. 423-498.000.

Allen-Bradley Company: *See—*
Waltz, Richard W., 4,195,324, Cl. 361-25.000.

Allen, Herbert. Convertible bag assembly. 4,194,602, Cl. 190-57.000.

Allen, John J.: *See—*
Lucas, Richard L.; and Allen, John J., 4,194,522, Cl. 137-116.500.

Allied Chemical Corporation: *See—*
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased, 4,195,105, Cl. 427-386.000.
Patel, Gordhanbhai N., 4,195,055, Cl. 422-56.000.
Patel, Gordhanbhai N., 4,195,056, Cl. 422-56.000.
Patel, Gordhanbhai N., 4,195,057, Cl. 422-56.000.
Patel, Gordhanbhai N., 4,195,058, Cl. 422-56.000.
Pieters, Wim J. M.; Gates, William E.; Carlson, Emery J.; and Wilkalis, John E., 4,194,990, Cl. 252-441.000.

Allis-Chalmers Corporation: *See—*
Kepler, James L., 4,194,528, Cl. 137-554.000.
Lucas, James H.; and Berg, David A., 4,194,757, Cl. 280-461.00A.

Alpha Nova Engineering, Inc.: *See—*
Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., 4,194,312, Cl. 38-102.500.

Alyabiev, Vitaly K.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.

Amano, Masuo; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system of a multi-cylinder internal combustion engine. 4,194,472, Cl. 123-119.00A.

Amax Inc.: *See—*
Duyvesteyn, Willem P. C., 4,195,065, Cl. 423-150.000.

American Can Company: *See—*
Fell, David A., 4,195,104, Cl. 427-261.000.

American Colloid Company: *See—*
Clem, Arthur G., 4,194,970, Cl. 209-263.000.

American Color & Chemical Corporation: *See—*
Smith, Roy E., 4,194,973, Cl. 210-50.000.

American Cyanamid Company: *See*—
Gerber, Samuel M.; and Misner, Robert E., 4,195,012, Cl. 260-42.210.

American Delphi, Inc.: *See*—
Kosmowski, Wojciech, 4,194,698, Cl. 241-236.000.

American District Telegraph Company: *See*—
Galvin, Aaron A., 4,195,286, Cl. 340-501.000.

American Hospital Supply Corporation: *See*—
Jasper, Mark F., 4,194,678, Cl. 229-23.00R.

American Seating Company: *See*—
Barecki, Chester J.; and Wilkerson, Larry A., 4,194,716, Cl. 248-575.000.

AMP Incorporated: *See*—
Davis, Thomas F., 4,194,913, Cl. 106-1.220.
Grabbe, Dimitry; and Patterson, Ronald, 4,195,193, Cl. 174-52.0FP.
Grubb, Daniel B., 4,194,276, Cl. 29-56.600.
Kuster, Charles W.; and Renshaw, Floyd H., 4,195,194, Cl. 174-59.000.

Anderson, Bernard O.: *See*—
Nielsen, Floyd P.; and Anderson, Bernard O., 4,194,467, Cl. 119-14.030.

Anderson, C. Roger; and Schulein, Robert B., to Shure Brothers, Incorporated. Loudspeaker horn with adjustable angle of dispersion. 4,194,590, Cl. 181-186.000.

Anderson, George J.; Santer, J. Owen; and Desmond, Timothy F., to Monsanto Company. High solids thermosettable coating compositions containing 1,4-dimethylolcyclohexane. 4,195,116, Cl. 428-524.000.

Anderson, Kenneth E. External female urinary drainage device. 4,194,508, Cl. 128-295.000.

Anderson, Michael C.: *See*—
Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., 4,194,638, Cl. 212-46.00R.

Ando, Tsuneo: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.

Andreasson, Bengt A., to AB Amals Mekaniska Verkstad. Roll stand with means for joining a web to another when unwound from rolls. 4,194,701, Cl. 242-58.300.

Andresen, Rolf, to International Business Machines Corporation. Record track identification and following. 4,195,320, Cl. 360-78.000.

Andrew Corporation: *See*—
Brown, Fred; and Vinezeano, Anthony D., 4,194,380, Cl. 72-64.000.

Anello, John L., to Phastek. Kinescope drive system for displaying audio signals. 4,195,310, Cl. 358-81.000.

Antos, George J.: *See*—
Flagg, John F.; and Antos, George J., 4,194,991, Cl. 252-441.000.

Aoyama, Kaneyosi: *See*—
Watanabe, Makio; Aoyama, Kaneyosi; and Shinohara, Makoto, 4,194,556, Cl. 165-51.000.

Applications Mecaniques et Robinetterie Industrielle: *See*—
Bonafous, Maurice J., 4,194,749, Cl. 277-163.000.

Aquaphase Laboratories, Inc.: *See*—
Whitcher, Kayleen S.; and Benner, Mary Jo, 4,195,059, Cl. 422-61.000.

Arai, Akihiro; and Yamamori, Eiji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera equipped with automatic unwinding device. 4,194,824, Cl. 354-173.000.

Araki, Yoshitaka: *See*—
Nakano, Yoshiyuki; Sato, Akihiko; and Araki, Yoshitaka, 4,194,820, Cl. 354-43.000.

Archer, Robert A.; and McMillan, Moses W., to Eli Lilly and Company. Benzocycloheptapyrans, compositions, and method of treatment. 4,195,024, Cl. 260-345.300.

Ardal og Sunndal Verk a. s.: *See*—
Nebell, Hans G. T., 4,194,958, Cl. 204-243.00M.

Arencibia, Jose P., Jr., to Air Products & Chemicals, Inc. Flow momentum reversing fire abatement system. 4,194,570, Cl. 169-46.000.

Arends, Albert W.: *See*—
West, George A.; Arends, Albert W.; and Pickard, George L., 4,194,663, Cl. 226-139.000.

Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, to Stanley Electric Co., Ltd. Flat type of fluorescent lamp. 4,195,249, Cl. 313-493.000.

Armasow, Waldemar; and Lindenthal, Hans, to Voith Getriebe KG. Hydrodynamic double brake. 4,194,600, Cl. 188-296.000.

Armstrong Cork Company: *See*—
Payne, Ellis P., 4,194,307, Cl. 35-49.000.

Artos Engineering Company: *See*—
Gudmestad, Ragnar, 4,194,281, Cl. 29-867.000.

Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, to Schubert & Salzer. Method and apparatus for detecting the faulty working of spinning units of open-end spinning machines. 4,195,345, Cl. 364-470.000.

Arvin Industries, Inc.: *See*—
Stratton, Boyd L., 4,195,317, Cl. 360-14.000.

Asahi Glass Company, Ltd.: *See*—
Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, 4,194,946, Cl. 162-156.000.
Sakemi, Hiroji; Morishita, Tomohiro; Numata, Hideji; and Ono, Takuro, 4,194,917, Cl. 106-62.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Sato, Yasushi; Ibaragi, Toshio; Ishihara, Masanobu; and Honda, Makoto, 4,195,136, Cl. 525-71.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Arai, Akihiro; and Yamamori, Eiji, 4,194,824, Cl. 354-173.000.

Ash, Robert M. Method and apparatus for making snow. 4,194,689, Cl. 239-2.00S.

Aslan, Wilfred A.; Guaglione, Giovanni P.; McCloud, James R.; and Meier, Henry G., to I-T-E Imperial Corporation. Single pole trip and ganged pole closing for multiphase high-voltage power circuit breakers. 4,195,211, Cl. 200-153.00D.

Ataka, Saburo; Inao, Kiyohisa; Tada, Kanetosi; Okamura, Yoshinori; and Kimura, Isamu, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Input screen. 4,195,230, Cl. 250-483.000.

Atkinson, Joseph G.; Belanger, Patrice C.; Remy, David C.; and Rooney, Clarence S., to Merck & Co., Inc. Appetite stimulating pyrrolo[2,1-b][3]benzazepines. 4,195,091, Cl. 424-267.000.

Atlantic Richfield Company: *See*—
Edison, Robert R.; and Dresser, Thorpe, 4,194,966, Cl. 208-132.000.
Kesling, Haven S., Jr.; and Zehner, Lee R., 4,195,184, Cl. 560-207.000.

ATO Chimie: *See*—
Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, 4,195,015, Cl. 260-45.75C.
Lombard, Serge; and Borg, Patrick, 4,194,392, Cl. 73-150.00A.

Atwood Vacuum Machine Company: *See*—
Marx, Thomas O., 4,194,731, Cl. 267-65.00R.

Audeh, Costandi A., to Mobil Oil Corporation. Iminodiimides of benzophenonetetracarboxylic dianhydride and compositions thereof. 4,194,885, Cl. 44-63.000.

Augsburger, Walter, to Sulzer Brothers Limited. Forced-flow boiler installation and method of operating the same. 4,194,468, Cl. 122-406.0ST.

August Bilstein, Firma: *See*—
Erschens, Willi, 4,194,725, Cl. 254-126.000.

Automobiles Peugeot: *See*—
Piquot, Gerard, 4,195,327, Cl. 362-66.000.

Ayer, George E.; and Blakeney, Hurley J., to Bunker Ramo Corporation. Electrical contacting element. 4,194,805, Cl. 339-107.000.

B.A.T. Cigaretten-Fabriken GmbH: *See*—
Borowski, Horst, 4,194,517, Cl. 131-261.00R.

Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., to Uralsky Lesotekhnichesky Institut; and Proizvodstvennoe Obiedinenie "Uralkhimplast". Phenol formaldehyde compression moulding composition comprising phenol formaldehyde-wood filler. 4,194,996, Cl. 260-17.200.

Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., to Nizhnetagilskoe Proizvodstvennoe Obiedinenie "Uralkhimplast"; and Uralsky Lesotekhnichesky Institut. Wood and phenol-formaldehyde compression-moulding composition and method for preparing the same. 4,195,019, Cl. 260-17.200.

Bachmann, Rainer: *See*—
Pioch, Peter P.; and Bachmann, Rainer, 4,194,345, Cl. 56-17.500.

Badger, David H. Bag carrier. 4,194,654, Cl. 224-45.00H.

Bahel, Vijay O.; Kuehner, Richard; and Rosenberg, Richard H., to Borg-Warner Corporation. Combination split system air conditioner and compression cycle domestic hot water heating apparatus. 4,194,368, Cl. 62-238.000.

Baichtal, James R., to TRW, Inc. Path test apparatus and method. 4,195,206, Cl. 370-14.000.

Bailey, Edward A.; and Ordway, James F., to Joy Manufacturing Company. Drilling apparatus and method. 4,194,579, Cl. 175-57.000.

Baker, Clifford B.; and Keirsey, James L., to United States of America, Navy. Hypersonic modular inlet. 4,194,519, Cl. 137-15.100.

Baker, David C.; and Putt, Sterling R., to Warner-Lambert Company. Imidazole compounds, methods for their production and conversion of said compounds into (R)-3-(2-deoxy-β-D-erythro-pentofuranosyl)-3,6,7,8-tetrahydroimidazol[4,5-d][1,3]diazepin-8-ol. 4,195,176, Cl. 536-24.000.

Baker, Gerald S.; and Hahn, Guerry L., to Cameron Iron Works, Inc. Choke. 4,194,718, Cl. 251-14.000.

Baker, Lamar T.: *See*—
Tu, George K.; Mager, George E.; Baker, Lamar T.; and Markle, Robert E., 4,195,352, Cl. 364-900.000.

Baker, Marvin E. Backwash system for swimming pool. 4,194,975, Cl. 210-108.000.

Balcke-Durr Aktiengesellschaft: *See*—
Joekel, Alfred, 4,194,381, Cl. 72-100.000.

Balkanli, Hayati, to Lynes, Inc. Self calibrating environmental condition sensing and recording apparatus. 4,195,349, Cl. 364-571.000.

Balko, Terry W., to Eli Lilly and Company. 2-(Substituted amino)-N-(3-substituted phenyl)-2-imidazoline-1-carbothioamides. 4,195,092, Cl. 424-273.00R.

Ball Corporation: *See*—
Dye, John F.; and Friebel, Virgil F., 4,194,464, Cl. 118-501.000.

Ballweber, Edward G.: *See*—
Hurlock, John R.; and Ballweber, Edward G., 4,195,003, Cl. 260-29.4UA.

Bamberg, William I., to GTE Sylvania Incorporated. High intensity discharge lamp having safety device with pyrophoric material. 4,195,251, Cl. 315-73.000.

Bandell, Ira, to Cosmetic Arts, Inc. Nail polish kit. 4,194,617, Cl. 206-45.000.

Bandoh, Kazuo, to Dai-Ichi Seiko Co., Ltd. Insert loading apparatus in transfer encapsulation. 4,194,865, Cl. 414-403.000.

Banta, Fred L., to Burndy Corporation. Fire protective structure. 4,194,521, Cl. 137-67.000.

Barbedienne, Roger S.: *See*—
Barthelemy, Louis; and Barbedienne, Roger S., 4,194,616, Cl. 198-778.000.
Barecki, Chester J.; and Wilkerson, Larry A., to American Seating Company. Air suspension driver's seat. 4,194,716, Cl. 248-575.000.
Baresel, Detlef, to Robert Bosch GmbH. Internal combustion engine exhaust gas monitoring system. 4,194,471, Cl. 123-119.0EC.
Baresel, Detlef; Scharner, Peter; Huth, Gerhard; and Gillert, Winfried, to Robert Bosch GmbH. Sintered metal oxide semiconductor having electrical conductivity highly sensitive to oxygen partial pressure. 4,194,994, Cl. 252-518.000.
Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., to International Business Machines Corporation. Loop configured data transmission system. 4,195,351, Cl. 364-900.000.
Barnsbee, Clive D., to Eastman Kodak Company. Apparatus and method for selectively reclaiming parts from film cartridges. 4,194,926, Cl. 134-29.000.
Barry, James D., to United States of America, Air Force. Remotely controlled electromagnetic optical focusing assembly. 4,194,811, Cl. 350-255.000.
Bartel, Siegfried: *See*—
Rapp, Heinz; Biedermann, Ernst; and Bartel, Siegfried, 4,194,836, Cl. 355-75.000.
Barth, Gunter; von Langsdorff, Fritz; and Rossmann, Kurt. Method and apparatus for producing a ground covering from individual paving stones. 4,194,853, Cl. 404-73.000.
Barthelemy, Louis; and Barbedienne, Roger S. Helical conveyors. 4,194,616, Cl. 198-778.000.
Bartholomaus, Reiner, to G. L. Rexroth GmbH. Flow meter. 4,194,394, Cl. 73-207.000.
Bartolini, Robert A.: *See*—
Bell, Alan E.; and Bartolini, Robert A., 4,195,312, Cl. 179-100.10G.
Bell, Alan E.; and Bartolini, Robert A., 4,195,313, Cl. 179-100.10G.
Barzaghi, Fernando; and Bianchi, Mario, to Roussel Uclaf. 1,3-Dihydro-imidazo-(4,5-b)-pyridin-2-ones. 4,195,088, Cl. 424-256.000.
BASF Aktiengesellschaft: *See*—
Stutz, Herbert; and Gehm, Robert, 4,195,149, Cl. 528-49.000.
Battigelli, Jean A.: *See*—
Levecque, Marcel A.; Battigelli, Jean A.; and Plantard, Dominique, 4,194,897, Cl. 65-5.000.
Bauman, John F. Attachment means for industrial push broom handles. 4,194,259, Cl. 15-146.000.
Bausch & Lomb Incorporated: *See*—
Deichert, William G.; Su, Kai C.; and Van Buren, Martin F., 4,195,030, Cl. 260-448.20E.
Fischer, David J.; McCandless, James A.; and Hager, James D., 4,194,814, Cl. 351-160.00R.
Baxter Travenol Laboratories, Inc.: *See*—
Boggs, Daniel R., 4,194,684, Cl. 233-26.000.
Bayer Aktiengesellschaft: *See*—
Hildebrand, Dietrich; and Gribnau, Thomas, 4,195,128, Cl. 435-178.000.
Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, 4,195,082, Cl. 424-216.000.
Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, 4,195,032, Cl. 260-453.0PH.
Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., 4,195,181, Cl. 544-316.000.
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,163, Cl. 528-315.000.
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,164, Cl. 528-339.000.
Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, 4,195,173, Cl. 536-17.00R.
Reichmann, Wolfgang; Konig, Klaus; and Koster, Johannes, 4,195,031, Cl. 260-453.00P.
Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,195,132, Cl. 521-155.000.
Baylis, Anthony B.: *See*—
Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.
BBC Brown Boveri & Company Limited: *See*—
Akyurek, Altan, 4,194,668, Cl. 228-6.00A.
Beauchamp, Derek J.; and Weston, Donald L. A., to Rolls-Royce Limited. Plasma welding. 4,195,216, Cl. 219-121.00P.
Becker, Werner; and Schrotz, Kurt, to Esselte Pendaflex Corporation. Printing device especially for labelling appliances. 4,194,448, Cl. 101-295.000.
Beckman Instruments, Inc.: *See*—
Ruegg, Frank A.; and Vitriol, William A., 4,195,326, Cl. 361-274.000.
Beeckmans, Jan M., to Canadian Patents & Development Limited. Method of sorting fluidized particulate material and apparatus therefor. 4,194,971, Cl. 209-467.000.
Belanger, Patrice C.: *See*—
Atkinson, Joseph G.; Belanger, Patrice C.; Remy, David C.; and Rooney, Clarence S., 4,195,091, Cl. 424-267.000.
Bell, Alan E.; and Bartolini, Robert A., to RCA Corporation. Recorder and antireflective record blank having an optically passive transparent layer. 4,195,312, Cl. 179-100.10G.
Bell, Alan E.; and Bartolini, Robert A., to RCA Corporation. Antireflective information record having an optically passive transparent layer. 4,195,313, Cl. 179-100.10G.
Bell & Howell Company: *See*—
Grant, Frederic F., 4,194,661, Cl. 226-95.000.
Bell, Robert E., to Essex Group, Inc. Lamp outage indicator circuit. 4,195,281, Cl. 340-79.000.
Bell Telephone Laboratories, Incorporated: *See*—
Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., 4,194,935, Cl. 148-175.000.
Freeman, Richard D., 4,195,338, Cl. 364-200.000.
Logan, Ralph A.; and Tsang, Won-Tien, 4,194,933, Cl. 148-171.000.
Bellaff, Leslie, to Weaver, William W. Home heating system. 4,194,488, Cl. 126-112.000.
Bellemore, Norman I.: *See*—
Zabner, Adolf; and Bellemore, Norman I., 4,194,645, Cl. 220-306.000.
Belletti, Lorenzo: *See*—
Lombardi, Claudio; and Belletti, Lorenzo, 4,194,476, Cl. 123-122.00H.
Belousov, Anatoly A.: *See*—
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.
Belousov, Anatoly V.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.
Belyaev, Nikolai A.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.
Benefiel, Robert L.; and Krumkalns, Eriks V., to Eli Lilly and Company. Fluoroalkoxyphenyl-substituted nitrogen heterocycles. 4,194,899, Cl. 71-76.000.
Beneke, Jene A., to Verson Allsteel Press Company. Low inertia clutch and brake system having safety operation features. 4,194,606, Cl. 192-18.00A.
Benjamin, Robert F.; and Mitchell, Kenneth B., to United States of America, Energy. Vacuum aperture isolator for retroreflection from laser-irradiated target. 4,194,813, Cl. 350-363.000.
Benner, Mary Jo: *See*—
Whitcher, Kayleen S.; and Benner, Mary Jo, 4,195,059, Cl. 422-61.000.
Bennett, Foster C., to Rheocast Corporation. Method to form metal containing nondendritic primary solids. 4,194,552, Cl. 164-71.000.
Benson, Harvey S.; and Wood, Charles D., III, to Southwest Research Institute. Draft power sensor and method for improving performance in earthmoving equipment. 4,194,574, Cl. 172-430.000.
Berg, David A.: *See*—
Lucas, James H.; and Berg, David A., 4,194,757, Cl. 280-461.00A.
Bergmann, Udo; and Klose, Karl, to U.S. Philips Corporation. Apparatus for optically scanning a surface. 4,195,223, Cl. 250-216.000.
Bergwerksverband: *See*—
Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, 4,194,686, Cl. 235-376.000.
Berman, Herbert L., to Optical Coating Laboratory, Inc. Infrared intrusion alarm system with temperature responsive threshold level. 4,195,234, Cl. 307-117.000.
Bernholdt, Harry F.: *See*—
Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.
Berthelsen, Mogens. Apparatus for cutting up and conveying material. 4,194,699, Cl. 241-236.000.
Bertrand, Pierre; Jamet, Michel; Strub, Jacques; and Walter, Eric, to Agence Nationale de Valorisation de la Recherche (Anvar). Control method utilizing a model control scheme. 4,195,337, Cl. 364-106.000.
Bessin, Pierre A. R.: *See*—
Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., 4,195,093, Cl. 424-275.000.
Besso, Michael M.: *See*—
Davis, Herbert L.; Jaffe, Michael L.; and Besso, Michael M., 4,195,161, Cl. 528-309.000.
Betteken, Joseph C.; and McDaniel, Jerome D., to Monsanto Company. Unitized catalytic reactor construction. 4,195,064, Cl. 422-191.000.
Bey, Michael P.; and Bey, Paul P. Digital color densitometer and exposure meter. 4,194,838, Cl. 356-404.000.
Bey, Paul P.: *See*—
Bey, Michael P.; and Bey, Paul P., 4,194,838, Cl. 356-404.000.
Bianchi, Mario: *See*—
Barzaghi, Fernando; and Bianchi, Mario, 4,195,088, Cl. 424-256.000.
Biebuyck, Lawrence F., to Howmet Corporation. Security astragal for double door assembly. 4,194,776, Cl. 292-346.000.
Biedermann, Ernst: *See*—
Rapp, Heinz; Biedermann, Ernst; and Bartel, Siegfried, 4,194,836, Cl. 355-75.000.
Bierschenk, Thomas R.; Pettit, Rowland; and Nielsen, Donald R., to PPG Industries, Inc. Preparation of ethylene glycol. 4,195,190, Cl. 568-860.000.
Biggs, Ronald L. Magnetic door stay retainer. 4,194,771, Cl. 292-251.500.
Billings, Ronald P.; and Hysell, Ellen M., to Mobil Oil Corporation. Fluid catalytic cracking. 4,194,965, Cl. 208-113.000.
Bimberg, Dieter H.: *See*—
Robbins, David J.; and Bimberg, Dieter H., 4,195,226, Cl. 250-363.00R.
Bingham, David, to Intersil, Inc., Commutating signal level translator. 4,195,266, Cl. 330-9.000.

Birch Brothers Southern, Incorporated: *See*—
Birch, Steven W., 4,194,659, Cl. 226-35.000.

Birch, Steven W., to Birch Brothers Southern, Incorporated. Seam responsive rolls and method. 4,194,659, Cl. 226-35.000.

Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, to Hoechst Aktiengesellschaft. Process for the dyeing or printing of polyester fibers. 4,194,878, Cl. 8-39.00B.

Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, to Hoechst Aktiengesellschaft. Process for the dyeing or printing of polyester fibers. 4,194,879, Cl. 8-39.00B.

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Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, to Hoechst Aktiengesellschaft. Process for the dyeing or printing of polyester fibers. 4,194,881, Cl. 8-41.00B.

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Birnbach, Curtis A.: *See*—
Birnbach, Lawrence H.; and Birnbach, Curtis A., 4,194,691, Cl. 239-63.000.

Birnbach, Lawrence H.; and Birnbach, Curtis A. Automatic control of the moisture content of the soil. 4,194,691, Cl. 239-63.000.

Bishop, Arthur E. Rotary valves. 4,194,531, Cl. 137-596.000.

Black & Decker Inc.: *See*—
Pioch, Peter P.; and Bachmann, Rainer, 4,194,345, Cl. 56-17.500.

Blakeney, Hurley J.: *See*—
Ayer, George E.; and Blakeney, Hurley J., 4,194,805, Cl. 339-107.000.

Blaske, Theodore A.; and Yu, Ho Y., to Varo Semiconductor, Inc. Method of passivating a semiconductor device utilizing dual polycrystalline layers. 4,194,934, Cl. 148-174.000.

Bleeker, Lyle A.; and Owen, Richard, to Minnesota Mining and Manufacturing Company. Fiber optical element imaging and illumination assembly. 4,194,827, Cl. 355-1.000.

Bleikamp, Roy H., Jr., to Monsanto Company. Electrical connection for electrodes. 4,194,960, Cl. 204-280.000.

Bloch, Paul: *See*—
Kraess, Henri; and Bloch, Paul, 4,195,275, Cl. 335-120.000.

Blocker, Edwin W., Jr., to Combustion Engineering, Inc. Centerless grinder. 4,194,323, Cl. 51-103.00R.

Bobbin, Eldred G. E., to Imperial Chemical Industries Limited. Method of treating suspensions of vinyl chloride/vinyl acetate copolymers. 4,195,168, Cl. 528-495.000.

Bodenbenner, Kurt; and von Plessen, Helmold, to Hoechst Aktiengesellschaft. Process for regenerating waste sulfuric acid. 4,194,952, Cl. 203-12.000.

Boeing Company, The: *See*—
Murakami, David; and Sommer, Donald J., 4,195,335, Cl. 363-49.000.

Boggs, Daniel R., to Baxter Travenol Laboratories, Inc. Centifugal apparatus using polyester elastomer tubing. 4,194,684, Cl. 233-26.000.

Bogoch, Samuel. Malignin, derived from brain tumor cells, complexes and polypeptides thereof. 4,195,017, Cl. 260-112.00R.

Bohlmark, John, to F M Mattsson Aktiebolag. Lever mechanism. 4,194,406, Cl. 74-110.000.

Boley, Robert E., to Stallion Corporation. Well driving and monitoring system. 4,194,393, Cl. 73-151.000.

Boller, Peter K., to Consumers Glass Company Limited. Container adapted to be stacked vertically and on its side. 4,194,626, Cl. 206-509.000.

Bonafous, Maurice J., to Applications Mecaniques et Robinetterie Industrielle. Sealing ring. 4,194,749, Cl. 277-163.000.

Bonas Machine Company Limited: *See*—
Griffith, John D., 4,194,539, Cl. 139-196.300.

Boney, William G., to UOP Inc. Non-regenerative HF alkylation process. 4,195,191, Cl. 585-706.000.

Bonora, Anthony C.; and Lorenz, Karl, to Siltec Corporation. Semiconductor wafer polishing machine and wafer carrier therefor. 4,194,324, Cl. 51-131.500.

Boon, Bruce T. E.; and Timmins, Armand P., to Eastern Cyclone Industries, Inc. Self cleaning collector system. 4,194,859, Cl. 406-172.000.

Borg, Patrick: *See*—
Lombard, Serge; and Borg, Patrick, 4,194,392, Cl. 73-150.00A.

Borg-Warner Corporation: *See*—
Bahel, Vijay O.; Kuehner, Richard; and Rosenberg, Richard H., 4,194,368, Cl. 62-238.000.

Borodin, Valerian A.; Sudakova, Lidia M.; and Kolobanov, Nikolai I. Weft thread gripping mechanism for a loom with a travelling-wave shed and a disk-type beat-up motion. 4,194,538, Cl. 139-194.000.

Borowski, Edward: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Borowski, Horst, to B.A.T. Cigaretten-Fabriken GmbH. Filter for cigarettes, cigarillos or pipes. 4,194,517, Cl. 131-261.00R.

Borror, Alan L.; Cincotta, Louis; Ellis, Ernest W.; and Foley, James W., to Polaroid Corporation. Sulfam (na) phthaleins. 4,195,180, Cl. 544-33.000.

Botham, Brian W.: *See*—
Valks, Robert K.; and Botham, Brian W., 4,194,376, Cl. 69-48.000.

Boursault, Jack: *See*—
Galland, Denis; and Boursault, Jack, 4,194,535, Cl. 137-636.400.

Bousaid, Issam S.; Hoyt, Donald L.; and Korstad, Ralph J., to Texaco Inc. Method for preconditioning a subterranean oil-bearing formation prior to in-situ combustion. 4,194,562, Cl. 166-245.000.

Bouteille, Daniel; Thomasse, Andre; and Petrimaux, Eric, to La Telemecanique Electrique. Control circuit for pneumatic shift register. 4,194,533, Cl. 137-624.180.

Boutros, Kamal S., to Bunker Ramo Corporation. Filter connector having contact strain relief means and an improved ground plate structure and method of fabricating same. 4,195,272, Cl. 333-182.000.

Bowen, Thomas C.: *See*—
Jennings, Frederick A.; and Bowen, Thomas C., 4,194,373, Cl. 64-14.000.

Bowerman, William J., to BRS, Inc. Athletic shoe for artificial turf with molded cleats on the sides thereof. 4,194,310, Cl. 36-128.000.

Box Innards, Inc.: *See*—
Peters, Charles L., Jr., 4,194,675, Cl. 229-15.000.

Boyer, Harold E., to Graphics Equipment International Corp. Handwheel disengage mechanism. 4,194,412, Cl. 74-554.000.

Boyer, Robert C.: *See*—
Williams, George J.; and Boyer, Robert C., 4,194,671, Cl. 228-183.000.

Bradshaw, Stephen L.: *See*—
Unsworth, William; King, John F.; and Bradshaw, Stephen L., 4,194,908, Cl. 75-168.00J.

Bragg, Charles G. An apparatus with a transversing hoist loader assembly. 4,194,867, Cl. 414-542.000.

Braid, Milton, to Mobil Oil Corporation. Sulfurized olefin lubricant additives and compositions containing same. 4,194,980, Cl. 252-45.000.

Braithwaite, David G.: *See*—
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,070, Cl. 423-498.000.
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,071, Cl. 423-498.000.

Bram, Georges E., to Pont-A-Mousson S.A. Device for the tensile locking of pipe elements. 4,194,769, Cl. 285-184.000.

Braun Aktiengesellschaft: *See*—
Moller, Heinrich; and Hoffmann, Karl-Heinz, 4,195,217, Cl. 219-370.000.

Braymer, George W.: *See*—
Crankshaw, Gary K.; and Braymer, George W., 4,194,640, Cl. 215-6.000.

Breau, Arisma J. Double dolly. 4,194,449, Cl. 104-172.00B.

Breyer, Eberhard: *See*—
Schonwald, Siegfried; Breyer, Eberhard; and Trojahn, Hans-Georg, 4,194,527, Cl. 137-543.000.
Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, 4,194,798, Cl. 308-189.00R.

Briggs, Peter D.; and Sharkey, Dennis R., to FMC Corporation. Labelling machine. 4,194,941, Cl. 156-361.000.

Bristol, Stanley M.; and Bullock, Norman E. Portable elapsed time recorder. 4,195,220, Cl. 235-92.00T.

British Industrial Plastics Limited: *See*—
Downing, Brian Y.; and Hamer, George D., 4,195,115, Cl. 428-482.000.

Broadway Companies, Inc., The: *See*—
Gaiser, William R., 4,194,641, Cl. 215-100.00A.

Brock, Andrew J.: *See*—
Popplewell, James M.; Acton, Constance F.; and Brock, Andrew J., 4,194,928, Cl. 148-2.000.

Bromberg, John R., to Bromberg, John Robert; and Levine, Robert Allan. Method of making leaded decorative panels. 4,194,669, Cl. 228-120.000.

Bromberg, John Robert: *See*—
Bromberg, John R., 4,194,669, Cl. 228-120.000.

Brook, Richard L., to DeSoto, Inc. Encapsulated impregnated rovings. 4,195,113, Cl. 428-375.000.

Brookman, Edward T.; Lohmann, Robert P.; and Markowski, Stanley J., to United Technologies Corporation. Means for improving the performance of burner shroud diffusers. 4,194,359, Cl. 60-39.360.

Brown, Fred; and Vinezeano, Anthony D., to Andrew Corporation. Corrugated elliptical waveguide with permanent twist. 4,194,380, Cl. 72-64.000.

Brown, George L.; and Spencer, Arthur T., to Mobil Oil Corporation. Aqueous can coatings of improved impermeability. 4,195,005, Cl. 260-29.6TA.

Brown, George L.; and Spencer, Arthur T., to Mobil Oil Corporation. Aqueous can coatings of improved impermeability. 4,195,006, Cl. 260-29.6TA.

Brown, Joe L. Fluid dispensing apparatus. 4,194,653, Cl. 222-402.250.

BRS, Inc.: *See*—
Bowerman, William J., 4,194,310, Cl. 36-128.000.

Brubaker, Gaylen R., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,194,987, Cl. 252-102.000.

Bruckdorfer, Roderick A., to Dow Chemical Company, The. Flame retardant copolycarbonates. 4,195,156, Cl. 528-171.000.

Brusselmans, Jacques H. F., to N.V. Raychem S.A. Heat recoverable article. 4,195,106, Cl. 428-35.000.

Buhler-Miag GmbH: *See*—
Gemsjager, Helmut, 4,194,445, Cl. 99-618.000.

Bukala, Alexander E., to Littelfuse, Inc. Double buzzer assembly. 4,195,285, Cl. 340-402.000.

Bullivant, Kenneth W.; and Van Ostenbridge, Ron, to K-Tron International, Inc. Weigh feeder. 4,194,649, Cl. 222-55.000.

Bullock, Edward K.: *See*—
Ruck, Bernard W.; Stella, Joseph A.; and Bullock, Edward K., 4,194,816, Cl. 352-130.000.
Bullock, Norman E.: *See*—
Bristol, Stanley M.; and Bullock, Norman E., 4,195,220, Cl. 235-92.00T.
Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, to Dynamit Nobel Aktiengesellschaft. Aqueous solution of mixtures of silicon-organic compounds. 4,195,141, Cl. 525-328.000.
Bunker Ramo Corporation: *See*—
Ayer, George E.; and Blakeney, Hurley J., 4,194,805, Cl. 339-107.000.
Boutros, Kamal S., 4,195,272, Cl. 333-182.000.
Chow, Weichien, 4,194,800, Cl. 339-17.0CF.
Spaulding, Tedford H., 4,194,802, Cl. 339-97.00P.
Buresi, Georges; Roche, Olivier C.; and Viallard, Michel B., to Compagnie Francaise des Petroles, S.A. Disconnectable riser columns for under water oil wells. 4,194,568, Cl. 166-340.000.
Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, to Hoechst Aktiengesellschaft. Process for the preparation of granular oxymethylene polymers having improved mechanical properties. 4,195,158, Cl. 528-230.000.
Burke, Oliver W., Jr., deceased (by Scala, Norma, administratrix); and Humphreys, Victor T., to Darrah, Marion; and Houghton, Joseph Y., co-trustees. Intrachromoleucospheruloid pigment compositions and processes for producing same. 4,194,920, Cl. 106-308.00M.
Burks, Kenneth N., Jr., to Ward Industries, Inc. Digital controlled rotation sensor. 4,195,291, Cl. 340-671.000.
Burndy Corporation: *See*—
Banta, Fred L., 4,194,521, Cl. 137-67.000.
Burnett, Craig R.: *See*—
Safranko, John W.; Burnett, Craig R.; and Kilburn, James E., 4,194,924, Cl. 134-12.000.
Burns & Russell Company of Baltimore City: *See*—
Russell, Alexander H.; and McClinton, John L., 4,195,010, Cl. 260-40.00R.
Burroughs Corporation: *See*—
Yuen, Raymond C., 4,195,358, Cl. 365-230.000.
Zwingman, Robert L., 4,195,261, Cl. 324-210.000.
Burroughs Wellcome Co.: *See*—
Richards, William H. G., 4,195,089, Cl. 424-258.000.
Butler Manufacturing Company: *See*—
Chalpin, Stephen F., Jr., 4,194,325, Cl. 52-14.000.
Paton, W. Donald; and Steenson, Thomas W., 4,194,333, Cl. 52-235.000.
Bylec, Elzbieta: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.
Byram, David C.; and Nowicki, John V., Jr., to Minnesota Mining and Manufacturing Company. Bracket assembly. 4,194,636, Cl. 211-71.000.
Byrd, Carlisle O., Jr., to Johns-Manville Corporation. Method and apparatus for filling seams between adjacent fiber blanket insulation modules. 4,194,282, Cl. 29-451.000.
C. A. Weidmuller KG: *See*—
Fitzler, Arno; and Kordt, Hans-Herbert, 4,194,801, Cl. 339-19.000.
C. R. Bard, Inc.: *See*—
Pickering, Keldon S.; and Ferguson, Keith T., 4,194,509, Cl. 128-350.00R.
Cadwallader, John Y.; and Frasier, Edward J. Downdraft woodburning stove. 4,194,487, Cl. 126-61.000.
Cafer, James E.: *See*—
Martin, Michael G.; Carver, Ronald M.; and Cafer, James E., 4,194,315, Cl. 43-55.000.
Caldwell, Edward C. Device for use in paired associate learning. 4,194,301, Cl. 35-9.00R.
Cale, Roland E., to Schaefer Equipment Incorporated. Railway car brake beam lever mounting. 4,194,599, Cl. 188-231.000.
Callaghan, William I.; Dawson, Dennis E.; Gubser, William D.; and Vero, Joseph A., to Towmotor Corporation. Transmission control. 4,194,720, Cl. 251-77.000.
Callahan, James J.: *See*—
Snow, John P.; and Callahan, James J., 4,194,593, Cl. 184-7.00D.
Cam-Stat Incorporated: *See*—
Hewitt, William L., 4,194,875, Cl. 431-45.000.
Cameron, Frank L., to GTE Laboratories Incorporated. Charge redistribution circuits. 4,195,282, Cl. 340-347.0AD.
Cameron Iron Works, Inc.: *See*—
Baker, Gerald S.; and Hahn, Guerry L., 4,194,718, Cl. 251-14.000.
Campagna, James V., Jr., to Motion Reflector Industries, Inc. Motion reflector. 4,194,809, Cl. 350-97.000.
Campbell, Ramsey G., to Stauffer Chemical Company. Removal of radioactive lead and polonium from tobacco. 4,194,514, Cl. 131-17.00R.
Campos, Juan M. Medical case. 4,194,628, Cl. 206-570.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Fothergill, Noel O., 4,195,360, Cl. 367-136.000.
Canadian Patents & Development Limited: *See*—
Beeckmans, Jan M., 4,194,971, Cl. 209-467.000.
Canon Kabushiki Kaisha: *See*—
Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.
Canon Kabushiki Kaisha Toshitama Hara: *See*—
Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, 4,194,812, Cl. 350-357.000.
Carl Freudenberg, Firma: *See*—
Forch, Hans; and Niklas, Helmut, 4,194,748, Cl. 277-152.000.
Carlson, Alfred D.: *See*—
Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., 4,194,263, Cl. 15-353.000.
Carlson, Emery J.: *See*—
Pieters, Wim J. M.; Gates, William E.; Carlson, Emery J.; and Wilkalis, John E., 4,194,990, Cl. 252-441.000.
Carlson, Norman G. Solar heat storage systems. 4,194,496, Cl. 126-430.000.
Carman, Richard W.; and Doherty, Edward J., III, to Union Carbide Corporation. Whole body imaging system mechanism. 4,195,227, Cl. 250-505.000.
Carmichael, Thomas F., to Syncro Corporation. Alternator with parallel windings and regulator therefor. 4,195,256, Cl. 322-90.000.
Carns, Arthur. Dog waste scoop. 4,194,777, Cl. 294-1.0BA.
Carpenter, Gregory A.: *See*—
Crowther, William H.; and Carpenter, Gregory A., 4,194,452, Cl. 108-138.000.
Carr, Dodd S.: *See*—
Radtke, Schrade F.; Carr, Dodd S.; and Kronstein, Max, 4,195,002, Cl. 260-29.20E.
Carver, Ronald M.: *See*—
Martin, Michael G.; Carver, Ronald M.; and Cafer, James E., 4,194,315, Cl. 43-55.000.
Caterpillar Tractor Co.: *See*—
Gurwicz, David; and Melocik, Grant C., 4,195,254, Cl. 318-334.000.
Hall, Lowell R., 4,194,532, Cl. 137-596.000.
Cavagnaro, William A., to Eastman Kodak Company. Apparatus for producing duplex copies. 4,194,829, Cl. 355-3.0TR.
CBS Inc.: *See*—
Moore, James K., 4,195,350, Cl. 364-724.000.
Celanese Corporation: *See*—
Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., 4,195,052, Cl. 264-210.500.
Davis, Herbert L.; Jaffe, Michael L.; and Besso, Michael M., 4,195,161, Cl. 528-309.000.
Nowak, Michael T.; and Rybny, Charles B., 4,194,955, Cl. 204-159.150.
Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.
Vanderspurt, Thomas H., 4,195,187, Cl. 562-545.000.
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. New polycyclic ether antibiotic. 4,195,079, Cl. 424-122.000.
Centronics Data Computer Corp.: *See*—
Zerillo, Samuel D., 4,194,846, Cl. 400-124.000.
Ceserani, Roberto: *See*—
Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.
Chalpin, Stephen F., Jr., to Butler Manufacturing Company. Gutter system for skylights or the like. 4,194,325, Cl. 52-14.000.
Chambers Corporation: *See*—
Hess, Gerald W., 4,194,321, Cl. 49-389.000.
Scherer, Richard M., 4,194,495, Cl. 126-339.000.
Chambers, Douglas L.; and Wan, Chong T. Wan, to Advanced Coating Technology, Inc. Cathode for sputtering. 4,194,962, Cl. 204-298.000.
Champion International Corporation: *See*—
Dutcher, Daniel P., 4,194,632, Cl. 206-626.000.
Kaiser, Thomas J., 4,194,630, Cl. 206-586.000.
Lohrbach, Mervin; and Peeples, Richard, 4,194,679, Cl. 229-39.00R.
Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,680, Cl. 229-43.000.
Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,681, Cl. 229-43.000.
Wysocki, Lawrence, 4,194,677, Cl. 229-17.00R.
Chang, John C. H., to Wallace Business Forms, Inc. Method of desensitizing carbonless paper. 4,195,103, Cl. 427-54.100.
Chapman, Robert D.: *See*—
Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., 4,194,312, Cl. 38-102.500.
Charles, John J.; and Gasman, Robert C., to GAF Corporation. Impact modified thermoplastic copolyester. 4,195,000, Cl. 260-22.00D.
Charles, John J.: *See*—
Gasman, Robert C.; and Charles, John J., 4,195,011, Cl. 260-40.00R.
Charpentier, Robert: *See*—
Mimoun, Hubert; and Charpentier, Robert, 4,195,039, Cl. 260-597.00R.
Chateau, Georges M.; and Falkner, Chester B., Jr., to Societe Nationale Elf Aquitaine (Production). Subsea station. 4,194,857, Cl. 405-203.000.
Chelin, Cesare; and Costa, Armando, to Ing. C. Olivetti & Co., S.p.A. Apparatus for loading a plurality of floppy disks in a reading and/or writing unit. 4,195,321, Cl. 360-98.000.
Chembiomed Ltd.: *See*—
Lemieux, Raymond U.; and Ratcliffe, R. Murray, 4,195,174, Cl. 536-18.000.

Chemische Werke Huls AG: *See—*
Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,195,162, Cl. 528-313.000.
Schneider, Wolfgang; and Niehaves, Kurt, 4,194,988, Cl. 252-312.000.
Chen, Nai Y.; and Wang, Ikai, to Mobil Oil Corporation. Catalytic conversion of hydrocarbons in reactor fractionator. 4,194,964, Cl. 208-108.000.
Chiang, Yunn H., to Polaroid Corporation. Preparation of 3-bromo-2-hydroxy-4,4,5,5-tetramethylcyclopenta-2-enone. 4,195,038, Cl. 260-586.00C.
Chiboroski, Joseph W., to Park-Ohio Industries, Inc. Feeding mechanism for induction heating coil. 4,195,213, Cl. 219-10.690.
Chlorine Engineers Corp., Ltd.: *See—*
Ichisaka, Teruo; and Ikegami, Tadao, 4,194,670, Cl. 228-179.000.
Chou, Kechia J., to Texaco Inc. N-sulfonylated polyalkenylsuccinimide and lubricant composition. 4,194,982, Cl. 252-47.500.
Chow, Weichien, to Bunker Ramo Corporation. Connector assembly for leadless microcircuit device. 4,194,800, Cl. 339-17.0CF.
Christensen, Charles W.: *See—*
Paterson, Malcolm M.; Paxson, William J.; and Christensen, Charles W., 4,194,633, Cl. 209-152.000.
Christensen, Inc.: *See—*
Ostertag, Alfred, 4,194,582, Cl. 175-321.000.
Christensen, Robert F., to Gibson, Shirley I., a part interest. Collapsible and reusable container insulator. 4,194,627, Cl. 206-545.000.
Christopher, Todd J.; and Tretter, Larry L., to RCA Corporation. Video processing system including comb filters. 4,195,309, Cl. 358-31.000.
Chromalloy American Corporation: *See—*
Mal, M. Kumar; and Tarkan, Stuart E., 4,194,910, Cl. 75-236.000.
Chrysler Corporation: *See—*
Kuusik, Uno, 4,194,520, Cl. 137-54.000.
Chung, Harold S.; Johnson, George C.; and Huang, Tracy J., to Mobil Oil Corporation. Ore beneficiation process. 4,194,969, Cl. 209-5.000.
Ciba-Geigy Corporation: *See—*
Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,195,090, Cl. 424-263.000.
Otto, Eberhard; Wehner, Wolfgang; and Wirth, Hermann O., 4,195,029, Cl. 260-429.700.
Pfeifer, Josef; and Peter, Heinz, 4,195,165, Cl. 528-346.000.
Spivack, John D., 4,195,016, Cl. 260-45.85R.
Wheeler, Ian R.; and Robertson, George H., 4,194,921, Cl. 106-309.000.
Cilia, Philip F.: *See—*
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Cincotta, Louis: *See—*
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Citizen Watch Co., Ltd.: *See—*
Kume, Kazunari; and Nomura, Yasushi, 4,194,351, Cl. 368-82.000.
Nishida, Mitsuo, 4,194,355, Cl. 368-282.000.
Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, to Hans List. Transducer for measuring the internal pressure in pipes. 4,194,401, Cl. 73-730.000.
Clairol Incorporated: *See—*
Walter, Henry J.; and White, Roy W., 4,195,218, Cl. 219-370.000.
Clarke, Robert W. Weldable sealant forms. 4,195,215, Cl. 219-91.210.
Clawson, Bert G.: *See—*
Segerson, James M.; and Clawson, Bert G., 4,194,709, Cl. 244-155.00R.
Clem, Arthur G., to American Colloid Company. Method for screening particulate materials. 4,194,970, Cl. 209-263.000.
Coal Industry (Patents) Ltd.: *See—*
Kenny, Peter; and Johnson, Stanley N., 4,194,790, Cl. 299-79.000.
Cobos, Charles R. Method of and apparatus for providing supplemental heat to buildings. 4,194,688, Cl. 237-53.000.
Coburn, Robert E., to Molins Machine Company, Inc. Web director. 4,194,662, Cl. 226-110.000.
Codman & Shurtleff, Inc.: *See—*
Walker, Peter S., 4,194,250, Cl. 3-1.910.
Coe, Stanley S. Lettering triangle. 4,194,293, Cl. 33-448.000.
Coen Company: *See—*
Voorheis, Temple S.; and Siegert, Louis D., 4,194,874, Cl. 431-8.000.
Cole, Martin T., to I.E.I. Proprietary Limited. Microwave intrusion or movement detectors. 4,195,289, Cl. 340-554.000.
Cole-Parmer Instrument Company: *See—*
Guttmann, Emil J., 4,195,255, Cl. 318-762.000.
Coleman, Ernest A., to GAF Corporation. Polyester resin with improved retention of properties. 4,195,134, Cl. 525-65.000.
Coleman, Lester E., to Lubrizol Corporation, The. Polymeric compositions, method for their preparation, and lubricants containing them. 4,194,985, Cl. 252-51.50A.
Columbia Machine, Inc.: *See—*
Holbrook, Fred D.; and Holbrook, Perry, 4,194,925, Cl. 134-24.000.
Combustion Engineering, Inc.: *See—*
Blocker, Edwin W., Jr., 4,194,323, Cl. 51-103.00R.
Martin, James R.; and Malki, Khaldoun W., 4,195,062, Cl. 422-168.000.
Combustion Unlimited Incorporated: *See—*
Straitz, John F., III, 4,194,876, Cl. 431-202.000.
Commerical Shearing, Inc.: *See—*
Petro, John D., 4,194,366, Cl. 60-483.000.
Compagnie des Montres Longines Francillon SA: *See—*
Thomi, Michel; Groothuis, Michel; and Meylan, Serge, 4,194,353, Cl. 368-38.000.
Compagnie Francaise des Petroles: *See—*
Marais, Lionel R., 4,194,567, Cl. 166-311.000.
Compagnie Francaise des Petroles, S.A.: *See—*
Buresi, Georges; Roche, Olivier C.; and Viallard, Michel B., 4,194,568, Cl. 166-340.000.
Thery, Jean P.; Alban, Claude M.; and Jordi, Albert P., 4,194,572, Cl. 169-66.000.
Compagnie Generale des Etablissements Michelin: *See—*
de Zarauz, Yves, 4,195,013, Cl. 260-42.330.
Roger, Jack, 4,194,548, Cl. 152-361.00R.
Congleton, Wayne L.; and Placey, Pat E. Egg carton. 4,194,682, Cl. 229-45.0EC.
Conine, James W., to Eli Lilly and Company. Nabilone granulation. 4,195,078, Cl. 424-80.000.
Conner, Leo B., Jr., to Motorola, Inc. Short range radar tracking apparatus. 4,195,297, Cl. 343-12.00R.
Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., to Alpha Nova Engineering, Inc. Needlepoint supporting frame and clip assembly. 4,194,312, Cl. 38-102.500.
Conroy, Peter J., to Motorola, Inc. Disc antenna feed for parabolic reflector. 4,195,301, Cl. 343-700.0MS.
Consumers Glass Company Limited: *See—*
Boller, Peter K., 4,194,626, Cl. 206-509.000.
Continental Group, Inc., The: *See—*
Gerber, Howard L., 4,195,214, Cl. 219-10.790.
Conway, Raymond J.; and Shah, Hasmukh T., to FMC Corporation. Apparatus for maximizing the firing field of a rotatable gun. 4,194,432, Cl. 89-41.00C.
Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., to Alforge Metals Corporation, Limited. Apparatus for pressure welding metal workpieces. 4,194,667, Cl. 228-4.100.
Cooper Industries, Inc.: *See—*
Mitchhart, Ray M.; and Zingl, Hans, 4,194,419, Cl. 81-57.330.
Cooper, Jacob: *See—*
Schwab, James J.; and Cooper, Jacob, 4,194,888, Cl. 55-2.000.
Copes, Anna M., legal representative: *See—*
Graham, David E.; and Copes, Joseph P., deceased, 4,195,096, Cl. 424-320.000.
Copes, Joseph P., deceased: *See—*
Graham, David E.; and Copes, Joseph P., deceased, 4,195,096, Cl. 424-320.000.
Corbellini, Margherita; and Greco, Alberto, to Snamprogetti, S.p.A. Method for the polymerization of olefines and means suitable thereto. 4,194,992, Cl. 252-442.000.
Corcokios, Nicholas, to United Technologies Corporation. Stator vane cluster. 4,194,869, Cl. 415-216.000.
Cornell Research Foundation, Inc.: *See—*
Hoshino, Yasutaka; and Scott, Fredric W., 4,195,130, Cl. 435-235.000.
Corning Glass Works: *See—*
Knowles, Daniel H., 4,194,462, Cl. 118-405.000.
Cosmetic Arts, Inc.: *See—*
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Costa, Armando: *See—*
Chelin, Cesare; and Costa, Armando, 4,195,321, Cl. 360-98.000.
Cotton, Lawrence M., to Stanley Works, The. Grooving indexer for routing apparatus. 4,194,543, Cl. 144-137.000.
Cox, Allen R.; Pascual, Rafael; and Rigbey, Leonard J., to International Business Machines Corporation. Record/playback head and data storage apparatus therefor. 4,195,322, Cl. 360-103.000.
Cox, Don; and Cox, Gail. Camper. 4,194,785, Cl. 296-169.000.
Cox, Gail: *See—*
Cox, Don; and Cox, Gail, 4,194,785, Cl. 296-169.000.
Craig, John W.: *See—*
Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., 4,195,318, Cl. 360-39.000.
Crankshaw, Gary K.; and Braymer, George W., to Upjohn Company, The. Vial and closure. 4,194,640, Cl. 215-6.000.
Cranmore, John W., to Lucas Industries Limited. Pivotal mounting arrangement. 4,194,850, Cl. 403-140.000.
Crawford, Carroll O. Potted plant support. 4,194,319, Cl. 47-27.000.
Crema, Erhard. Method and device for removing solid and/or liquid means containing harmful substances. 4,194,978, Cl. 210-242.00S.
Crnkovic, James J. Fireplace thermal reflector apparatus. 4,194,490, Cl. 126-141.000.
Crosby, Edward G.; Henning, James E.; and Hornbeck, Frederick C., to International Business Machines Corporation. Conductive plastic and method of preparation. 4,195,114, Cl. 428-404.000.
Crown International, Inc.: *See—*
Stanley, Gerald R., 4,195,267, Cl. 330-265.000.
Crowther, William H.; and Carpenter, Gregory A. Convertible table. 4,194,452, Cl. 108-138.000.
Csatary, Laszlo K. Intra-uterine contraceptive device. 4,194,503, Cl. 128-130.000.
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Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.
Culp, Harry L. Rotary cleaning device. 4,194,260, Cl. 15-230.140.
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., to Shur-Line Manufacturing Co., Inc. Applicator with multi-positional handle. 4,194,852, Cl. 403-299.000.

Custom Concepts, Incorporated: *See*—
Kubiatowicz, James F., 4,194,461, Cl. 116-77.000.

Cutler, Norman W., Jr., to Polaroid Corporation. Compact die cutting apparatus. 4,194,423, Cl. 83-589.000.

Cutter, Larry I., to Walter Kidde & Company, Inc. Safe deposit box nests and method of constructing same. 4,194,453, Cl. 109-56.000.

Cycowicz, Izchak; and Frimmet, Alfred, to Mohasco Corporation. Wall proximity chairs and hardware therefor. 4,194,783, Cl. 297-88.000.

Dahlig, Halina: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Dahlstrom, Baesley I.: *See*—
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Dai-Ichi Seiko Co., Ltd.: *See*—
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Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,194,384, Cl. 72-325.000.

Daimler-Benz Aktiengesellschaft: *See*—
Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, 4,194,763, Cl. 280-784.000.

D'Amato, Ralph J.; and Stone, Robert P., to RCA Corporation. Color picture tube having improved corrugated mask. 4,195,248, Cl. 313-403.000.

Damico, Dennis J.; and Martin, Brian, to Lord Corporation. Method of bonding employing an adhesive composition containing polyisocyanate reaction products having an available isocyanate content of not more than 0.5 percent. 4,194,940, Cl. 156-331.000.

Darrah, Marion: *See*—
Burke, Oliver W., Jr., deceased; and Humphreys, Victor T., 4,194,920, Cl. 106-308.00M.

Dashineau, Melvin A.: *See*—
Ueltz, Herbert F. G.; Dashineau, Melvin A.; and Pino, James J., 4,194,887, Cl. 51-309.000.

Data Motion, Inc.: *See*—
Seitz, Alan F., 4,194,660, Cl. 226-74.000.

Date, Nobuaki: *See*—
Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.

Davidson, Edmund B., to RCA Corporation. Water based photoresist. 4,194,912, Cl. 430-322.000.

Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., to Celanese Corporation. Production of improved polyester filaments of high strength possessing an unusually stable internal structure. 4,195,052, Cl. 264-210.500.

Davis, Herbert L.; Jaffe, Michael L.; and Besso, Michael M., to Celanese Corporation. Polyester fiber. 4,195,161, Cl. 528-309.000.

Davis, Thomas F., to AMP Incorporated. Electroless tin and tin-lead alloy plating baths. 4,194,913, Cl. 106-1.220.

Dawson, Dennis E.: *See*—
Callaghan, William I.; Dawson, Dennis E.; Gubser, William D.; and Vero, Joseph A., 4,194,720, Cl. 251-77.000.

Day, William A.; and Lavagnino, Edward R., to Eli Lilly and Company. 9-Amino-dibenzopyrans. 4,195,025, Cl. 260-345.300.

Deal, James F., III, to Milliken Research Corporation. Method of manufacturing powdered cleaning composition. 4,194,993, Cl. 252-541.000.

Dean, Edward H.: *See*—
Figge, Irving E.; and Dean, Edward H., 4,194,938, Cl. 156-212.000.

Deerwester, Donald A., to Pappageorge, George, a part interest. Apparatus and method for separation of sausage chubs. 4,194,268, Cl. 17-52.000.

De Grijs, Johan C., to U.S. Philips Corporation. Solar collector. 4,194,493, Cl. 126-442.000.

DeGroot, Peter B.: *See*—
Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.

de Heer, Aart: *See*—
Van Acker, Eduard M. A. A. J.; Kooijmans, Petrus G.; and de Heer, Aart, 4,195,004, Cl. 260-29.6TA.

Dehner, James L., to Pullman Incorporated. Railway car center sill. 4,194,451, Cl. 105-416.000.

Deichert, William G.; Su, Kai C.; and Van Buren, Martin F., to Bausch & Lomb Incorporated. Preparation of monomeric organosilicon esters. 4,195,030, Cl. 260-448.20E.

Deinlein-Kalb, Hans, to Klinger AG. Method of and apparatus for ascertaining the state of aggregation of a medium. 4,194,390, Cl. 73-61.00R.

Delany, James F.: *See*—
Kress, George H.; and Delany, James F., 4,194,584, Cl. 180-9.24R.

Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, to ATO Chimie. Heat and aging stable copolyetheresteramides and method of manufacturing same. 4,195,015, Cl. 260-45.75C.

Delmed, Inc.: *See*—
Faust, Clifford C.; and Cilia, Philip F., 4,194,369, Cl. 62-371.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., to Wisconsin Alumni Research Foundation. Process for preparing 1α-hydroxylated compounds. 4,195,027, Cl. 260-397.200.

de Miranda, William R. R.; and Smith, Edwin R., to United States of America, Army. Tape automated bonding test board. 4,195,195, Cl. 174-68.500.

Denckla, W. Donner. Electrophoresis apparatus. 4,194,963, Cl. 204-299.00R.

De Nicola, Joseph P., to Instron Corporation. Testing machine grip. 4,194,402, Cl. 73-859.000.

Derby, Norwin C.: *See*—
Williamson, Robert R.; and Derby, Norwin C., 4,194,652, Cl. 222-185.000.

de Rop, Walter J. R.: *See*—
Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., 4,195,253, Cl. 316-1.000.

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Anderson, George J.; Santer, J. Owen; and Desmond, Timothy F., 4,195,116, Cl. 428-524.000.

DeSoto, Inc.: *See*—
Brook, Richard L., 4,195,113, Cl. 428-375.000.
Sekmakas, Kazys; and Shah, Raj, 4,195,147, Cl. 526-312.000.

Detalle, Bernard, to Societe Europeene de Propulsion. Device for imparting a movement of rotation to a craft when it is launched. 4,194,706, Cl. 244-3.230.

Deutsch, Leslie J.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,194,426, Cl. 84-1.240.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co. Ltd. Echo effect circuit for an electronic musical instrument. 4,194,426, Cl. 84-1.240.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Generation of noise-like tones in an electronic musical instrument. 4,194,427, Cl. 84-1.240.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, 4,195,068, Cl. 423-455.000.

deVeer, John A.: *See*—
Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.

de Zarauz, Yves, to Compagnie Generale des Etablissements Michelin. Elastomer composition for pneumatic tire treads. 4,195,013, Cl. 260-42.330.

Dhein, Rolf: *See*—
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Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,164, Cl. 528-339.000.

Diamond, John N. Single sheathing roof panel. 4,194,335, Cl. 52-419.000.

Dice, Harry E., Sr., to Hardesty, George K. C., a part interest. Pick-proof lock. 4,194,379, Cl. 70-421.000.

Dickenson, Robert A., to Rohr Industries, Inc. Flight thrust reverser and vertical thrust control divergent nozzle systems. 4,194,692, Cl. 239-265.390.

Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, to Otto Fuchs KG; and Schuro Heinz Schurmann GmbH & Co. Method of making insulated construction element. 4,194,284, Cl. 29-509.000.

Dienstuhl, Karl W.: *See*—
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.

Dierks, Robert P.; and Rillie, Robert J., to United States Gypsum Company. Glass-reinforced composite gypsum board. 4,195,110, Cl. 428-218.000.

Diesel Kiki Company, Ltd.: *See*—
Yamaguchi, Toshio, 4,194,607, Cl. 192-84.00T.

Dilley, Charles A. Gutter cleaner tool. 4,194,780, Cl. 294-19.00R.

Dillinger, Lester L. Machine for reaming tubes of different lengths. 4,194,258, Cl. 15-104.10R.

Dimitracopoulos, Panayotis C.: *See*—
Kennington, Frank W.; and Dimitracopoulos, Panayotis C., 4,194,415, Cl. 74-805.000.

Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., to Bell Telephone Laboratories, Incorporated. Method of making high mobility multilayered heterojunction devices employing modulated doping. 4,194,935, Cl. 148-175.000.

Ditges, Gunter, to Myer, Roth & Pastor Machinenfabrik GmbH. Wire straightening apparatus having a hydraulically driven wire feed. 4,194,541, Cl. 140-147.000.

Dittrich, Gunther: *See*—
Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, 4,195,068, Cl. 423-455.000.

Dixon, Kenneth W., to GAF Corporation. Modified tertiary amide polymers. 4,195,142, Cl. 525-340.000.

Doane, William M.: *See*—
Fanta, George F.; Stout, Edward I.; and Doane, William M., 4,194,998, Cl. 260-17.4GC.

Dobhan, Herbert: *See*—
Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, 4,194,752, Cl. 280-11.280.

Dr. C. Otto & Comp. G.m.b.H.: *See*—
Pries, Erich, 4,194,951, Cl. 202-227.000.

Dr. Ing. Rudolf Hell GmbH: *See*—
Knop, Hans G., 4,194,839, Cl. 356-407.000.

Dodge, Paul D.: *See*—
Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., 4,194,263, Cl. 15-353.000.

Doherty, Edward J., III: *See*—
Carman, Richard W.; and Doherty, Edward J., III, 4,195,227, Cl. 250-505.000.

Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Solar radiation energy absorber. 4,195,124, Cl. 428-469.000.

Donnelly, Thomas L., Jr. Bed for stimulating circulation. 4,194,499, Cl. 128-24.00R.

Dorfman, Edwin; Hindersinn, Raymond R.; and Schwartz, Willis T., Jr., to Hooker Chemicals & Plastics Corp. Unsatured polyester resins having improved fire retardance. 4,195,014, Cl. 260-45.75R.

Dostal, Gerald A.; and Havlick, Richard S., to N. A. Taylor Co., Inc. Bench back rest convertible to locked table top. 4,194,784, Cl. 297-126.000.

Dow Chemical Company, The: *See*—
Bruckdorfer, Roderick A., 4,195,156, Cl. 528-171.000.
Kaiser, Mark E.; and Smith, Harry A., 4,195,154, Cl. 528-98.000.
Priddy, Duane B., 4,195,169, Cl. 528-500.000.
Ward, Eldon L., 4,195,138, Cl. 525-404.000.

Dow Corning Corporation: *See*—
Trombley, Wayne E., 4,194,815, Cl. 351-160.00R.

Downing, Brian Y.; and Hamer, George D., to British Industrial Plastics Limited. Coating compositions. 4,195,115, Cl. 428-482.000.

Downing Displays, Inc.: *See*—
Downing, Jack G., 4,194,313, Cl. 40-610.000.

Downing, Jack G., to Downing Displays, Inc. Articulated panel display. 4,194,313, Cl. 40-610.000.

Doyle, Richard F.; and Myers, Edward T., to GTE Sylvania Incorporated. High voltage terminal structure and flyback transformer. 4,195,278, Cl. 336-90.000.

Drake, Charles A.; and Williams, Ralph P., to Phillips Petroleum Company. Hydrogenated polynitrile mixture and use as epoxy hardener. 4,195,155, Cl. 528-121.000.

Dravo Corporation: *See*—
Wacker, Karl; and Feigk, Fritz, 4,194,729, Cl. 266-144.000.

Drennan, Herman R.; and Hana, Norman A. Method for repairing broken denture. 4,195,047, Cl. 264-17.000.

Dresser Industries, Inc.: *See*—
Mitchell, Howard E., 4,194,578, Cl. 175-53.000.

Dresser, Thorpe: *See*—
Edison, Robert R.; and Dresser, Thorpe, 4,194,966, Cl. 208-132.000.

Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., to U.S. Philips Corporation. Method of ageing a gas discharge lamp. 4,195,253, Cl. 316-1.000.

Drown, Clifford F.: *See*—
Martin, Kenneth R.; and Drown, Clifford F., 4,194,257, Cl. 9-342.000.

Du Pont of Canada Limited: *See*—
Phibbs, Murray K.; and Sipos, Peter A., 4,195,034, Cl. 260-465.00E.

Dubinin, Viktor P.: *See*—
Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor S.; and Safronov, Vladimir E., 4,195,354, Cl. 365-105.000.

DuBois, Edmund H.; and Sheldon, John D., to Outboard Marine Corporation. Speed and clutch control for engines including shift interlock. 4,194,609, Cl. 192-0.096.

Dubois, Jean-Claude: *See*—
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Dumont, Claude: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,195,081, Cl. 424-263.000.

Dunjushkin, Evgeny S.: *See*—
Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., 4,194,996, Cl. 260-17.200.

Dunlap, Bill D.: *See*—
Pounds, Walter R.; and Dunlap, Bill D., 4,195,210, Cl. 200-159.00A.

Dunleavy, Raymond A.; and Papa, Anthony J., to Union Carbide Corporation. Phenol-aldehyde-amine resin/glycol curative compositions. 4,195,151, Cl. 528-163.000.

Du Pont de Nemours, E. I., and Company: *See*—
Edwards, Donald W.; and Gorondy, Emery J., 4,195,303, Cl. 346-74.100.
Frankfort, Hans R. E.; and Knox, Benjamin H., 4,195,051, Cl. 264-176.00F.
Renner, Carl A., 4,195,040, Cl. 260-599.000.

Dursch, Walter: *See*—
Kleiner, Hans-Jerg; and Dursch, Walter, 4,195,035, Cl. 260-545.00P.

Dutcher, Daniel P., to Champion International Corporation. Candy and pill dispenser carton. 4,194,632, Cl. 206-626.000.

Duyvesteyn, Willem P. C., to Amax Inc. Leaching nickeliferous oxide ores. 4,195,065, Cl. 423-150.000.

Dye, John F.; and Friebel, Virgil F., to Ball Corporation. Record care pad. 4,194,464, Cl. 118-501.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, 4,195,141, Cl. 525-328.000.

Dynetics Engineering Corp.: *See*—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., 4,194,685, Cl. 235-375.000.

Dzieciuch, Matthew A.: *See*—
Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.

Dzus Fastener Co., Inc.: *See*—
Wright, Andrew C. W., 4,194,429, Cl. 85-5.00P.

Earley, Roger A., to ICI Americas Inc. Preparation of biphenols by the oxidative coupling of alkylphenols. 4,195,189, Cl. 568-730.000.

Earls, David E.; and Long, Gary N., to Union Carbide Corporation. Multiple bed rapid pressure swing adsorption for oxygen. 4,194,891, Cl. 55-26.000.

East Wind Industries, Inc.: *See*—
Melander, Clarence, 4,194,247, Cl. 2-2.000.

Eastern Company, The: *See*—
Evans, Gordon C., 4,194,858, Cl. 405-259.000.

Eastern Cyclone Industries, Inc.: *See*—
Boon, Bruce T. E.; and Timmins, Armand P., 4,194,859, Cl. 406-172.000.

Eastman, George Y., to Thermacore, Inc. Freeze accommodating heat pipe. 4,194,559, Cl. 165-105.000.

Eastman Kodak Company: *See*—
Barnsbee, Clive D., 4,194,926, Cl. 134-29.000.
Cavagnaro, William A., 4,194,829, Cl. 355-3.0TR.
Irick, Gether, Jr.; and Wang, Richard H. S., 4,194,989, Cl. 252-400.00A.
Matteson, Lawrence J.; and Shonts, David J., 4,194,818, Cl. 354-33.000.
Sethi, Gurdip S., 4,194,822, Cl. 354-121.000.

Easton, John T.; and Harden, Harry J. Wedge and bolt assembly for panel units. 4,194,717, Cl. 249-192.000.

Eaton Corporation: *See*—
Garrett, Wayne H.; and Neuman, Richard F., 4,194,596, Cl. 188-72.700.
Graham, Robert O.; Rauenbuehler, John A.; and Snowdon, Albert C., 4,195,212, Cl. 200-243.000.
Hicks, Bradford W., 4,194,586, Cl. 180-24.090.
Richards, Donald L., 4,194,770, Cl. 285-206.000.
Richards, Elmer A., 4,194,410, Cl. 74-339.000.
Stine, Clifford R.; and Wojtecki, Rudolph G., 4,194,536, Cl. 138-149.000.

Ebner, Josef E. Tumbling mill. 4,194,710, Cl. 241-182.000.

Eckels, John F. Externally applied support for a penis. 4,194,502, Cl. 128-79.000.

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Williams, George J.; and Boyer, Robert C., 4,194,671, Cl. 228-183.000.

Edamura, Mizuo: *See*—
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Edison, Robert R.; and Dresser, Thorpe, to Atlantic Richfield Company. Apparatus and method for improved fluid distribution in a tube of a direct fired heater. 4,194,966, Cl. 208-132.000.

Edler, Folke J. Sulfite spent liquor-urea formaldehyde resin adhesive product. 4,194,997, Cl. 260-17.500.

Edson, Sydney, to Textron Inc. Molded peg strip. 4,194,637, Cl. 211-96.000.

Edwards, Donald W.; and Gorondy, Emery J., to Du Pont de Nemours, E. I., and Company. Magnetic printing process and apparatus. 4,195,303, Cl. 346-74.100.

Edwards, William J.; and Hurler, Herbert T., to Singer Company, The. Blind stitch mechanism. 4,194,456, Cl. 112-176.000.

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Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.

Egger, Hanns. Method for storing waste materials and their combustion residues in a manner harmless to underground water. 4,194,855, Cl. 405-128.000.

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Yamauchi, Noriyuki; Toko, Yoshiaki; and Ehara, Takao, 4,194,864, Cl. 414-283.000.

Eisenbach, Elliot: *See*—
Gajewski, Vincent J.; and Eisenbach, Elliot, 4,195,150, Cl. 528-52.000.

Eisenhut, Werner: *See*—
Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, 4,194,686, Cl. 235-376.000.

Elbert, Raymond J.; and Sara, Raymond V., to Union Carbide Corporation. Stress relieving of metal/ceramic abradable seals. 4,194,673, Cl. 228-219.000.

Electric Power Research Institute, Inc.: *See*—
Perry, Elijah R.; and Rabinowitz, Mario, 4,195,334, Cl. 363-44.000.

Electronic Memories and Magnetics Corporation: *See*—
O'Connell, Timothy R.; and Leach, George S., 4,195,356, Cl. 365-189.000.

Electronics for Medicine, Inc.: *See*—
Feldman, Charles L., 4,194,511, Cl. 128-696.000.

Elektroschmelzwerk Kempten GmbH: *See*—
Schwetz, Karl A.; and Vogt, Georg, 4,195,066, Cl. 423-291.000.

Elevator Equipment Co.: *See*—
Lawrence, William A. P.; and Welchel, Robert J., 4,194,534, Cl. 137-625.390.

Eli Lilly and Company: *See*—
Archer, Robert A.; and McMillan, Moses W., 4,195,024, Cl. 260-345.300.
Balko, Terry W., 4,195,092, Cl. 424-273.00R.
Benefiel, Robert L.; and Krumkalns, Eriks V., 4,194,899, Cl. 71-76.000.
Conine, James W., 4,195,078, Cl. 424-80.000.
Day, William A.; and Lavagnino, Edward R., 4,195,025, Cl. 260-345.300.
Herron, David K.; and Whitesitt, Celia A., 4,195,021, Cl. 260-239.00A.

Ong, John T. H., 4,195,084, Cl. 424-238.000.
Thompson, Gerald L., 4,195,022, Cl. 260-244.400.
Eller, Dennis E., to Hess, Donald J., a part interest. Truck tire safety reflector. 4,194,810, Cl. 350-99.000.
Elliott, Robert L.; and Song, Won R., to Exxon Research & Engineering Co. Ethylene copolymer/ethylenically unsaturated nitrogen reactant ene adducts having utility as multifunctional V. I. improvers for lubricating oils. 4,194,984, Cl. 252-51.50A.
Ellis, Ernest W.: *See*—
Borror, Alan L.; Cincotta, Louis; Ellis, Ernest W.; and Foley, James W., 4,195,180, Cl. 544-33.000.
Elvegaard, Eilif. Clamping structure. 4,194,712, Cl. 248-68.00R.
Emby, Gordon N.: *See*—
Hoy, John; Emby, Gordon N.; and Meerholz, Edgar F., 4,195,083, Cl. 424-200.000.
Emde, Friedhelm: *See*—
Stengel, Edgar; and Emde, Friedhelm, 4,194,728, Cl. 266-125.000.
Emerson Electric Co.: *See*—
Mlyniec, Kenneth P., 4,195,209, Cl. 200-83.00R.
Emhart Industries, Inc.: *See*—
Petre, Mark L.; and Lipp, Ellis P., 4,195,208, Cl. 200-63.00R.
Endo, Yoshinori, to Yamaha Hatsudoki Kabushiki Kaisha. EGR Recirculation at low load in internal combustion engines. 4,194,474, Cl. 123-119.00A.
Energy Conversion Devices, Inc.: *See*—
Lewis, Gary D., 4,194,826, Cl. 354-299.000.
Energy Transportation Group, Inc.: *See*—
Tornay, Edmund G., 4,194,870, Cl. 417-53.000.
Epstein, Max: *See*—
Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., 4,194,808, Cl. 350-96.320.
Erbstoesser, Steven R.: *See*—
Stokley, Charles O.; and Erbstoesser, Steven R., 4,194,561, Cl. 166-162.000.
Erco Industries Limited: *See*—
Hatherly, David G., 4,194,953, Cl. 204-95.000.
Williams, Roy E., 4,194,961, Cl. 204-286.000.
Eriksson, Jan. A. L. Device in an apparatus for processing trees. 4,194,542, Cl. 144-2.00Z.
Ermisch, Dorothee: *See*—
Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, 4,194,455, Cl. 110-251.000.
Erschens, Willi, to August Bilstein, Firma. Vehicle jack. 4,194,725, Cl. 254-126.000.
ESB Technology Company: *See*—
Margalit, Nehemiah; and Krouse, Philip E., 4,195,122, Cl. 429-194.000.
Esselte Pendaflex Corporation: *See*—
Becker, Werner; and Schrotz, Kurt, 4,194,448, Cl. 101-295.000.
Essex Group, Inc.: *See*—
Bell, Robert E., 4,195,281, Cl. 340-79.000.
Ettenberg, Michael; and Kressel, Henry, to RCA Corporation. Two-way single fiber optical communication system. 4,195,269, Cl. 332-7.510.
Euclid Products Co., Inc., The: *See*—
Finke, Theodore R.; and Mavko, Edward M., 4,194,683, Cl. 232-15.000.
Eue, Ludwig: *See*—
Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., 4,195,181, Cl. 544-316.000.
Eunipp AG: *See*—
Flisch, Hermann, 4,194,420, Cl. 82-2.700.
Evans, Anthony C.; and Goering, Karl, to Kelsey Hayes Co. Disc brake anti-rattle means. 4,194,597, Cl. 188-73.500.
Evans, Gordon C., to Eastern Company, The. Mine roof bolt anchor installation. 4,194,858, Cl. 405-259.000.
Evans, Lewis L. Ladder stand-off. 4,194,592, Cl. 182-214.000.
Ewald, Roland; and Lembke, Herbert, to G. L. Rexroth GmbH. Hydraulic control valve. 4,194,719, Cl. 251-30.000.
Extrados Company Limited: *See*—
Svirklys, Ferdinand M., 4,194,320, Cl. 47-59.000.
Exxon Production Research Company: *See*—
Jahns, Hans O., 4,194,856, Cl. 405-130.000.
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Exxon Research & Engineering Co.: *See*—
Elliott, Robert L.; and Song, Won R., 4,194,984, Cl. 252-51.50A.
Murphy, Raymond F., 4,195,133, Cl. 525-71.000.
F M Mattsson Aktiebolag: *See*—
Bohlmark, John, 4,194,406, Cl. 74-110.000.
Fa. Dieter Haubold Industrielle Nagelgerate: *See*—
Lange, Wilfried, 4,194,621, Cl. 206-343.000.
Facet Enterprises, Inc.: *See*—
Miller, Donald L., 4,194,610, Cl. 192-111.00A.
Fachbach, Heinz: *See*—
Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,194,484, Cl. 123-195.00C.
Fahnler, Friedrich: *See*—
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,163, Cl. 528-315.000.
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,164, Cl. 528-339.000.
Faktor, Marc M.; and Stevenson, John L., to Post Office, The. Electrolytic etch preparation of semiconductor surfaces. 4,194,954, Cl. 204-129.300.
Falk, Alfons B.; Stenman, Antero E.; and Wikland, Svante, to Aktiebolaget Hagglund & Soner. Suspension system for tracked vehicles. 4,194,761, Cl. 280-705.000.
Falkner, Chester B., Jr.: *See*—
Chateau, Georges M.; and Falkner, Chester B., Jr., 4,194,857, Cl. 405-203.000.
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, to Politechnika Gdanska; and Instytut Przemyslu Farmaceutycznego. Salts of N-glycosyl derivatives of polyene macrolides, especially N-methylglucamine salts as well as the method of their preparation. 4,195,172, Cl. 536-17.00R.
Fanta, George F.; Stout, Edward I.; and Doane, William M., to United States of America, Agriculture. Highly absorbent polyhydroxy polymer graft copolymers without saponification. 4,194,998, Cl. 260-17.4GC.
Farge, Jean C.: *See*—
Krantz, Tibor; and Farge, Jean C., 4,194,906, Cl. 75-125.000.
Farmer, William R. Erratically rollable game device. 4,194,737, Cl. 273-58.0BA.
Farmitalia Certo Erba S.p.A.: *See*—
Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.
Faser Industries: *See*—
Lewis, Robert P., 4,194,622, Cl. 206-363.000.
Faust, Clifford C.; and Cilia, Philip F., to Delmed, Inc. Cryogenically frozen package articles. 4,194,369, Cl. 62-371.000.
Faustini, Franco: *See*—
Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.
Fauth, Gunter, to AGFA-Gevaert, A.G. Arrangement of a photographic camera having two deviating mirrors. 4,194,823, Cl. 354-150.000.
Fauth, Gunter, to AGFA-Gevaert, A.G. Photographic camera. 4,194,825, Cl. 354-212.000.
Fauth, Gunter: *See*—
Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,194,821, Cl. 354-86.000.
Fechillas, Michael R.: *See*—
Ness, Irving S.; and Fechillas, Michael R., 4,194,507, Cl. 128-287.000.
Federated Metals Corporation: *See*—
Kurr, George W.; and Myers, Michael, 4,195,197, Cl. 174-78.000.
Fehr, Theodor; and Stadler, Paul, to Sandoz Ltd. 6-Branched chain alkyl sustituted ergot alkaloids. 4,195,086, Cl. 424-250.000.
Feigk, Fritz: *See*—
Wacker, Karl; and Feigk, Fritz, 4,194,729, Cl. 266-144.000.
Feinauer, Roland: *See*—
Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,195,162, Cl. 528-313.000.
Feistel, Horst, to International Business Machines Corporation. Variant key matrix cipher system. 4,195,196, Cl. 178-22.000.
Feistel, Horst, to International Business Machines Corporation. Key controlled block-cipher cryptographic system employing a multidirectional shift matrix. 4,195,200, Cl. 178-22.000.
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Fell, David A., to American Can Company. Videojet ink composition. 4,195,104, Cl. 427-261.000.
Ferguson, Keith T.: *See*—
Pickering, Keldon S.; and Ferguson, Keith T., 4,194,509, Cl. 128-350.00R.
Ferrara, Peter T., to AGFA-Gevaert, A.G. X-ray film grip. 4,194,635, Cl. 211-45.000.
Fiat Societa per Azioni: *See*—
Lombardi, Claudio; and Belletti, Lorenzo, 4,194,476, Cl. 123-122.00H.
Figge, Irving E.; and Dean, Edward H., to United States of America, Army. Prestressed article. 4,194,938, Cl. 156-212.000.
Filzinger, Klaus: *See*—
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Fine, David H.: *See*—
Rounbehler, David P.; and Fine, David H., 4,194,884, Cl. 23-232.00R.
Finke, Theodore R.; and Mavko, Edward M., to Euclid Products Co., Inc., The. Coin vault. 4,194,683, Cl. 232-15.000.
Finley, Bill G.; and Finley, Terry L., to Rug Specialist Inc. Vacuum extraction cleaning machine. 4,194,262, Cl. 15-314.000.
Finley, Terry L.: *See*—
Finley, Bill G.; and Finley, Terry L., 4,194,262, Cl. 15-314.000.
Finzel, Sigismund: *See*—
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Firth, John H. Target radar reflector. 4,195,298, Cl. 343-18.00C.
Fischer, Artur. Mounting element. 4,194,337, Cl. 52-713.000.
Fischer, David J.; McCandless, James A.; and Hager, James D., to Bausch & Lomb Incorporated. Transparent opthalmic lens having engraved surface indicia. 4,194,814, Cl. 351-160.00R.

Fischer, Siegbert: *See*—
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Fischer, Wilhelm: *See*—
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Fisher, John S. Method for constructing town houses and the like. 4,194,339, Cl. 52-745.000.
Fisher, Robert D.: *See*—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., 4,194,685, Cl. 235-375.000.
Fisher, Robert E., to Up-Right, Inc. Mobile scaffold with fixed-use-position outriggers. 4,194,591, Cl. 182-17.000.
Fitzler, Arno; and Kordt, Hans-Herbert, to C. A. Weidmuller KG. Cross-connecting comb for electrical terminals. 4,194,801, Cl. 339-19.000.
Flagg, John F.; and Antos, George J., to UOP Inc. Acidic multimetallic hydrocarbon conversion catalytic composite. 4,194,991, Cl. 252-441.000.
Flisch, Hermann, to Eunipp AG. Automatic bar-loading apparatus for a multi-spindle automatic lathe. 4,194,420, Cl. 82-2.700.
Floyd, Don E., to Henkel Corporation. N-Alkyl polyamines and curing of epoxy resins therewith. 4,195,152, Cl. 528-87.000.
FMC Corporation: *See*—
Briggs, Peter D.; and Sharkey, Dennis R., 4,194,941, Cl. 156-361.000.
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Conway, Raymond J.; and Shah, Hasmukh T., 4,194,432, Cl. 89-41.00C.
Myers, Harold E.; and Sheetz, Charles E., 4,194,343, Cl. 53-493.000.
Peters, Ronald L., 4,194,347, Cl. 56-328.0TS.
Foerster, George S.; and Stuhler, Harold A., to N L Industries, Inc. Production of purified lead and antimony oxide. 4,194,904, Cl. 75-78.000.
Foley, James W.: *See*—
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Fontanges, Robert, to Science Union et Cie, Societe Francaise de Recherche Medicale. Process for the preparation of hemagglutinin from viral sources and methods of utilizing same. 4,195,076, Cl. 424-43.000.
Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., to Norton Company. Randomly dumpable self orienting spiral packing elements. 4,195,043, Cl. 261-94.000.
Foote, John P., to U.S. Armament Corporation. Ejector assembly for a firearm adapter. 4,194,314, Cl. 42-25.000.
Forch, Hans; and Niklas, Helmut, to Carl Freudenberg, Firma. Radial shaft sealing ring. 4,194,748, Cl. 277-152.000.
Ford Motor Company: *See*—
Giardini, Dante S., 4,194,322, Cl. 51-81.00R.
Kummer, Joseph T., 4,195,119, Cl. 429-38.000.
Nichols, Robert W.; and Pierce, Stanley L., Jr., 4,194,604, Cl. 192-3.300.
Noakes, Jack E.; and Terner, Leslie L., 4,195,049, Cl. 264-63.000.
Rado, William G., 4,194,480, Cl. 123-148.0ND.
Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.
Wood, Tony J., 4,194,395, Cl. 73-304.00C.
Fork, Frank W., to H. H. Robertson Company. Electrical wiring distribution system. 4,194,332, Cl. 52-220.000.
Forman, Hugh M.; and Rauschenberger, Richard A., to G. D. Searle & Co. Container support means. 4,194,715, Cl. 248-311.10R.
Foseco International Limited: *See*—
George, Raymond D.; and Stevenson, John, 4,194,918, Cl. 106-80.000.
Foseco Trading AG: *See*—
Matsumoto, Chiaki; Imai, Hirokatsu; and Okawa, Masaru, 4,194,730, Cl. 266-275.000.
Fothergill, Noel O., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Signal processing circuit. 4,195,360, Cl. 367-136.000.
Foti, Thomas M. Probe for nystagmus testing. 4,194,512, Cl. 128-742.000.
Fouilloy, Jean-Pierre, to U.S. Philips Corporation. Power-supply device for a microchannel tube. 4,195,222, Cl. 250-213.0VT.
Fowler Holdings Limited: *See*—
Rautenbach, Jacobus J., 4,195,111, Cl. 428-218.000.
Fox, Charles L., Jr., to Research Corporation. Zinc containing hypoglycemic agents. 4,195,094, Cl. 424-289.000.
Frankfort, Hans R. E.; and Knox, Benjamin H., to Du Pont de Nemours, E. I., and Company. Process for preparing new polyester filaments. 4,195,051, Cl. 264-176.00F.
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Frasier, Edward J.: *See*—
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Freeman, Richard D., to Bell Telephone Laboratories, Incorporated. Computer typesetting. 4,195,338, Cl. 364-200.000.
Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, to Ciba-Geigy Corporation. 2-(3-Amino-2-hydroxy-propoxy)pyridine derivatives and pharmaceutical compositions therewith. 4,195,090, Cl. 424-263.000.
Freuler, Fred H. Spreader roll. 4,194,275, Cl. 26-100.000.
Friebel, Virgil F.: *See*—
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Friedr. Fingscheidt GmbH: *See*—
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Friese, Egon F., to International Telephone and Telegraph Corporation. Heating apparatus. 4,195,219, Cl. 219-388.000.
Frimmet, Alfred: *See*—
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Fritschi, Bruno; Malina, Ludek; and Oestreicher, Max, to Rieter Machine Works Ltd. Sliver can transporting dolly. 4,194,866, Cl. 414-459.000.
Fuchs, Hermann; and Filzinger, Klaus, to Hoechst Aktiengesellschaft. Water-soluble disazo dyestuffs and process for coloring synthetic polyamide fibres with them. 4,194,883, Cl. 8-41.00B.
Fuhrmann, Peter: *See*—
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Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Method of manufacturing heat-transfer wall for vapor condensation. 4,194,384, Cl. 72-325.000.
Fujii, Akio: *See*—
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Fukui, Saburo; Yamamoto, Tsutomu; and Iida, Takamitsu, to Kansai Paint Co., Ltd. Method for immobilizing enzymes and microbial cells. 4,195,129, Cl. 435-182.000.
Fukumori, Masahito: *See*—
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Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, to Licentia Patent-Verwaltungs-G.m.b.H. Gate turn-off thyristor. 4,195,306, Cl. 357-38.000.
Fulmer, Ray M.: *See*—
Symborski, Alex P.; Fulmer, Ray M.; and Thomas, David W., 4,194,896, Cl. 65-3.00R.
Furuitsu, Satoshi: *See*—
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G. D. Searle & Co.: *See*—
Forman, Hugh M.; and Rauschenberger, Richard A., 4,194,715, Cl. 248-311.10R.
Waters, E. Craig, 4,194,386, Cl. 73-3.000.
G. L. Rexroth GmbH: *See*—
Bartholomaus, Reiner, 4,194,394, Cl. 73-207.000.
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Gabets, Anna P.: *See*—
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Coleman, Ernest A., 4,195,134, Cl. 525-65.000.
Dixon, Kenneth W., 4,195,142, Cl. 525-340.000.
Gasman, Robert C.; and Charles, John J., 4,195,011, Cl. 260-40.00R.
Graham, David E.; and Copes, Joseph P., deceased, 4,195,096, Cl. 424-320.000.
Timm, Walter C., 4,195,107, Cl. 428-40.000.
Gaiser, William R., to Broadway Companies, Inc., The. Two-piece blow molded container with handle. 4,194,641, Cl. 215-100.00A.
Gajewski, Vincent J.; and Eisenbach, Elliot, to M & T Chemicals Inc. Novel composition for preparing urethane/urea block copolymers. 4,195,150, Cl. 528-52.000.
Gallacher, Lawrence V., to King Industries, Inc. Solvent-extraction process for recovery and separation of metal values. 4,194,905, Cl. 75-101.0BE.

Galland, Denis; and Boursault, Jack, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes. Quick-closing multi-way valves. 4,194,535, Cl. 137-636.400.

Galvin, Aaron A., to American District Telegraph Company. Alarm system having improved false alarm rate and detection reliability. 4,195,286, Cl. 340-501.000.

Gambacorta, Mario, to S.I.A.P. Societa Industriale Agglomerati e Prodotti Petroliferi S.p.A. Process for producing graphite agglomerates, and products obtained by it. 4,194,901, Cl. 75-48.000.

Gambro AB: *See*—
Jonsson, Ulf L. P., 4,194,974, Cl. 210-90.000.

Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, to Farmitalia Certo Erba S.p.A. ω-Noraromatic-13,14-dehydro-prostaglandins and process for their preparation. 4,195,183, Cl. 560-53.000.

Garrett Corporation, The: *See*—
Matulich, Dan S.; and Saylor, B. Franklin, 4,194,357, Cl. 60-39.020.

Garrett, Wayne H.; and Neuman, Richard F., to Eaton Corporation. Disc brake housing assembly. 4,194,596, Cl. 188-72.700.

Garrison, Judd F., to John Thomas Batts, Inc. Garment grip construction for hangers. 4,194,274, Cl. 24-248.00R.

Gasman, Robert C.; and Charles, John J., to GAF Corporation. Injection molding compositions. 4,195,011, Cl. 260-40.00R.

Gasman, Robert C.: *See*—
Charles, John J.; and Gasman, Robert C., 4,195,000, Cl. 260-22.00D.

Gastrock, Edward A., to Stewart, Charles L.; and Gastrock Protein Corporation. Sight glass and sampling system. 4,194,398, Cl. 73-422.0TC.

Gastrock Protein Corporation: *See*—
Gastrock, Edward A., 4,194,398, Cl. 73-422.0TC.

Gates, Albert G. R., to Gestetner Limited. Stencil loading in stencil duplicators. 4,194,447, Cl. 101-128.100.

Gates, William E.: *See*—
Pieters, Wim J. M.; Gates, William E.; Carlson, Emery J.; and Wilkalis, John E., 4,194,990, Cl. 252-441.000.

Gatsis, John G., to UOP Inc. Hydrocarbon sulfide catalyst hydrorefining process utilizing a non-stoichiometric vanadium sulfide catalyst. 4,194,967, Cl. 208-215.000.

Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR. Percussion mechanism. 4,194,435, Cl. 91-234.000.

Gazard, Maryse; and Dubois, Jean-Claude, to Thomson-CSF. Electrolithographic process which makes it possible to improve the sensitivity of masking resins, and a mask obtained by this kind of process. 4,195,108, Cl. 428-195.000.

Gealer, Roy L.: *See*—
Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.
Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.

Gehm, Robert: *See*—
Stutz, Herbert; and Gehm, Robert, 4,195,149, Cl. 528-49.000.

Gemsjager, Helmut, to Buhler-Miag GmbH. Self-adjusting husker. 4,194,445, Cl. 99-618.000.

General Atomic: *See*—
Ledin, Eric, 4,194,948, Cl. 176-87.000.

General Electric Company: *See*—
Hedel, Kurt K., 4,195,333, Cl. 363-21.000.
Hirsch, Harold H., 4,195,247, Cl. 313-330.000.
Krause, Werner A., 4,195,198, Cl. 174-94.00S.
Mark, Victor, 4,195,157, Cl. 528-174.000.
Rabatin, Jacob G., 4,195,228, Cl. 250-483.000.
Staff, Bonner W., 4,194,400, Cl. 73-623.000.
Stenger, Richard E., 4,194,358, Cl. 60-39.060.
Thompson, Richard L., 4,195,332, Cl. 362-391.000.

General Signal Corporation: *See*—
Young, John E. G., 4,194,363, Cl. 60-445.000.

General Tire & Rubber Company, The: *See*—
Gruber, David P., 4,195,008, Cl. 260-29.70H.
Sommer, John G., Jr., 4,195,143, Cl. 525-354.000.

George, Raymond D.; and Stevenson, John, to Foseco International Limited. Alkali metal silicate binder compositions. 4,194,918, Cl. 106-80.000.

Gerber, Howard L., to Continental Group, Inc., The. Apparatus for induction heating of metal plates with holes. 4,195,214, Cl. 219-10.790.

Gerber, Samuel M.; and Misner, Robert E., to American Cyanamid Company. Process for preparing 2-chloro-1-methylaminoanthraquinone and plastics containing the same. 4,195,012, Cl. 260-42.210.

Gerlinger, Frederic, to Kuhn, S.A. Haymaking machine with rotary rake heads. 4,194,348, Cl. 56-377.000.

Gestetner Limited: *See*—
Gates, Albert G. R., 4,194,447, Cl. 101-128.100.

Giardini, Dante S., to Ford Motor Company. Constant force sheet glass cutting drill assembly. 4,194,322, Cl. 51-81.00R.

Gibson, Duane M.: *See*—
Scott, Lewis A.; and Gibson, Duane M., 4,194,544, Cl. 144-193.00D.

Gibson, Shirley I.: *See*—
Christensen, Robert F., 4,194,627, Cl. 206-545.000.

Gillert, Winfried: *See*—
Baresel, Detlef; Scharner, Peter; Huth, Gerhard; and Gillert, Winfried, 4,194,994, Cl. 252-518.000.

Gilmore, William J., to Acco Industries Inc. Safety belt anchorage assembly. 4,194,786, Cl. 297-468.000.

Gingle, Alan R.; and Gingle, Terrance D. System for enhancing the properties of windows and the like. 4,194,331, Cl. 52-203.000.

Gingle, Terrance D.: *See*—
Gingle, Alan R.; and Gingle, Terrance D., 4,194,331, Cl. 52-203.000.

Giovanni Marchisio & C. S.r.l.: *See*—
Marchisio, Giovanni, 4,194,375, Cl. 66-132.00T.

Gisser, Henry: *See*—
Mertwoy, Helen E.; and Gisser, Henry, 4,195,144, Cl. 526-173.000.

Glasscock, Edwin E.: *See*—
Hackney, James W.; and Glasscock, Edwin E., 4,195,192, Cl. 174-40.00R.

Glavan, Ljiljana. Furniture component systems. 4,194,642, Cl. 217-12.00R.

Gliemeroth, Georg. Optical fiber wave-guides for signal transmission comprising multiple component glass with an adjusted expansion co-efficient between the core and mantle. 4,194,807, Cl. 350-96.310.

Gmohling, Werner, to SKW Trostberg Aktiengesellschaft. Desulfurization agent for ferrous melts and method of using the same. 4,194,902, Cl. 75-55.000.

Goel, Jitendra, to RCA Corporation. Method of making a field effect transistor. 4,194,285, Cl. 29-579.000.

Goering, Karl: *See*—
Evans, Anthony C.; and Goering, Karl, 4,194,597, Cl. 188-73.500.

Gogins, Laird B., to Power-Matic Corporation. Variable speed transmission. 4,194,407, Cl. 74-117.000.

Gold, Henry O. Dental tool. 4,194,291, Cl. 433-75.000.

Golik, Jerzy: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Gondouin, Michel. Process for the manufacture of rigid and impervious insulating panels. 4,194,280, Cl. 29-417.000.

Goosman, Richard. Waste heat recovery device. 4,194,558, Cl. 165-105.000.

Gorig, Rudolf. Method and apparatus for making drum-shaped cardboard containers. 4,194,440, Cl. 93-39.00C.

Gorondy, Emery J.: *See*—
Edwards, Donald W.; and Gorondy, Emery J., 4,195,303, Cl. 346-74.100.

Gossard, Arthur C.: *See*—
Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., 4,194,935, Cl. 148-175.000.

Gottschall, Harald. Dry chemical fire extinguishing powder containing alkali metal gluconate. 4,194,979, Cl. 252-7.000.

Goulding, Terence; and Orton, Michael L., to Imperial Chemical Industries Limited. Fire retardant composition comprising a melamine-aldehyde-phosphate condensate. 4,195,139, Cl. 525-441.000.

Gouley, Claude A., to Societe Nationale Industrielle Aerospatiale. Device for simulating the locating signals of an ILS beacon. 4,195,300, Cl. 343-109.000.

Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, to Montedison S.p.A. Dichloroacetamides which are antidotes for protecting maize against the toxic action of herbicidal esters of N,N-disubstituted glycines, methods for preparing the antidotes, and compositions comprising them. 4,195,036, Cl. 260-561.0HL.

Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, to Hauni-Werke Korber & Co. KG. Method and apparatus for conditioning burley or greenleaf tobacco. 4,194,515, Cl. 131-135.000.

Grabbe, Dimitry; and Patterson, Ronald, to AMP Incorporated. Lead frame and chip carrier housing. 4,195,193, Cl. 174-52.0FP.

Graber, Harold J. Shank and coulter mounting clamp. 4,194,576, Cl. 172-763.000.

Gracovetsky, Serge: *See*—
Lucas, John M.; and Gracovetsky, Serge, 4,194,840, Cl. 356-429.000.

Graham, David E.; and Copes, Joseph P., deceased (by Copes, Anna M., legal representative), to GAF Corporation. Carboxylic amides as fungicides to eumycotina in phanerogamia plant life. 4,195,096, Cl. 424-320.000.

Graham, Robert O.; Rauenbuehler, John A.; and Snowdon, Albert C., to Eaton Corporation. Contactor having higher fault current withstandability. 4,195,212, Cl. 200-243.000.

Gramer, Eben J.; and Kugler, William E. Method and apparatus for installing solar collector panels. 4,194,497, Cl. 126-432.000.

Gransell, Ake; Jansson, Sven A.; and Sporrong, Malte, to Rederiaktiebolaget Nordstjernan. Method and apparatus for ultrasonic cleaning of component parts. 4,194,922, Cl. 134-1.000.

Grant, Frederic F., to Bell & Howell Company. Tape advancing methods and apparatus. 4,194,661, Cl. 226-95.000.

Graphics Equipment International Corp.: *See*—
Boyer, Harold E., 4,194,412, Cl. 74-554.000.

Great Neck Saw Manufacturers, Inc.: *See*—
Roe, Justus G., 4,194,703, Cl. 242-107.200.

Greco, Alberto: *See*—
Corbellini, Margherita; and Greco, Alberto, 4,194,992, Cl. 252-442.000.

Greene & Kellogg, Inc.: *See*—
McCombs, Norman R.; and Vrana, Edward E., 4,194,890, Cl. 55-18.000.

Greier, Josef: *See*—
Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,194,484, Cl. 123-195.00C.
Gretz, Thomas J., to Scott & Fetzer Company, The. Liquid-tight connector. 4,194,768, Cl. 285-178.000.
Grey, Michael O., to NCR Corporation. Locating and maintaining a hub member on a shaft. 4,194,847, Cl. 400-320.000.
Gribnau, Thomas: *See*—
Hildebrand, Dietrich; and Gribnau, Thomas, 4,195,128, Cl. 435-178.000.
Griffith, John D., to Bonas Machine Company Limited. Loom shuttle. 4,194,539, Cl. 139-196.300.
Griffth, James R.; and O'Rear, Jacques G., to United States of America, Navy. Alkanediamide-linked polyphthalocyanines coordinated with $SnCl_2$. 4,195,166, Cl. 528-270.000.
Grigat, Ernst: *See*—
Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,195,132, Cl. 521-155.000.
Grimaldi, Anthony J. Gravity orthopedic device. 4,194,500, Cl. 128-75.000.
Grimm, Werner, to Huizinga, Jan Jakob. Lock coupling for safety belts in motor vehicles. 4,194,764, Cl. 280-801.000.
Groh, Allen R.; Karlov, Frank J.; and Happ, Lawrence R., to Shure Brothers, Incorporated. Phonograph pick-up transducer using a one-piece bearing and inertial damper fabricated from different materials. 4,194,744, Cl. 274-37.000.
Groothuis, Michel: *See*—
Thomi, Michel; Groothuis, Michel; and Meylan, Serge, 4,194,353, Cl. 368-38.000.
Groult, Alain: *See*—
Tournier, Herve; and Groult, Alain, 4,194,986, Cl. 252-102.000.
Grove, John L., to JLG Industries, Inc. Truck mounted crane and method of constructing same. 4,194,639, Cl. 212-59.00R.
Grove, John L.; and Wagner, Gregg A., to JLG Industries, Inc. Scissors linkage workman's platform. 4,194,723, Cl. 254-9.90C.
Grubb, Daniel B., to AMP Incorporated. Connector holding fixture. 4,194,276, Cl. 29-56.600.
Gruber, David P., to General Tire & Rubber Company, The. Latex extended with grafted mineral oil. 4,195,008, Cl. 260-29.70H.
Gryl, Frank J., Jr.; and Mahler, James A., to Western Electric Company, Incorporated. Inductive coil module. 4,195,201, Cl. 178-46.000.
GTE Laboratories Incorporated: *See*—
Cameron, Frank L., 4,195,282, Cl. 340-347.0AD.
Meslener, George J., 4,195,237, Cl. 307-261.000.
GTE Sylvania Incorporated: *See*—
Bamberg, William I., 4,195,251, Cl. 315-73.000.
Doyle, Richard F.; and Myers, Edward T., 4,195,278, Cl. 336-90.000.
Marchetti, Charles R., 4,195,264, Cl. 328-134.000.
Guaglione, Giovanni P.: *See*—
Aslan, Wilfred A.; Guaglione, Giovanni P.; McCloud, James R.; and Meier, Henry G., 4,195,211, Cl. 200-153.00D.
Gubser, William D.: *See*—
Callaghan, William I.; Dawson, Dennis E.; Gubser, William D.; and Vero, Joseph A., 4,194,720, Cl. 251-77.000.
Gudmestad, Ragnar, to Artos Engineering Company. Apparatus and method for stripping wire leads. 4,194,281, Cl. 29-867.000.
Gudorf, James L., to Mead Corporation, The. Charge plate and method of manufacture. 4,195,304, Cl. 346-75.000.
Guell, Jose M. D., to Jumberca, S.A. Process for knitting a single-faced pile fabric. 4,194,374, Cl. 66-93.000.
Guerin, Bernard: *See*—
Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, 4,195,015, Cl. 260-45.75C.
Guillaume, Emile A. H., to Zelacolor Systems Establishment. Unit for reproducing transparent originals, or the like. 4,194,834, Cl. 355-67.000.
Guillaume, Jacques: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,195,081, Cl. 424-263.000.
Gulf Oil Corporation: *See*—
Miller, J. Blaine, 4,194,788, Cl. 299-2.000.
Gulf Research and Development Company: *See*—
Schulz, Johann G. D.; and Sabourin, Edward T., 4,195,185, Cl. 562-407.000.
Schulz, Johann G. D.; and Sabourin, Edward T., 4,195,186, Cl. 562-407.000.
Gulf & Western Manufacturing Company: *See*—
Huzyak, Paul, 4,194,383, Cl. 72-245.000.
Gulick, Anne M.: *See*—
Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.
Gurwicz, David; and Melocik, Grant C., to Caterpillar Tractor Co. Control circuit for a D.C. motor. 4,195,254, Cl. 318-334.000.
Guse, Rolf: *See*—
Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.
Guttmann, Emil J., to Cole-Parmer Instrument Company. Electronic brake for AC motors. 4,195,255, Cl. 318-762.000.
H. H. Robertson Company: *See*—
Fork, Frank W., 4,194,332, Cl. 52-220.000.
Haapsaari, Timo: *See*—
Huostila, Markku; and Haapsaari, Timo, 4,194,947, Cl. 162-207.000.
Haberhauer, Helmuth, to Hoechst Aktiengesellschaft. Electrophotographic apparatus for developing latent electrostatic charge images. 4,194,466, Cl. 118-657.000.
Haberhauer, Helmuth: *See*—
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Hackney-Glasscock, Inc.: *See*—
Hackney, James W.; and Glasscock, Edwin E., 4,195,192, Cl. 174-40.00R.
Hackney, James W.; and Glasscock, Edwin E., to Hackney-Glasscock, Inc. Safety disconnect switch for suspended cables. 4,195,192, Cl. 174-40.00R.
Haganuma, Tomoyuki: *See*—
Abe, Shintaro; and Haganuma, Tomoyuki, 4,195,353, Cl. 364-900.000.
Hagen, Edward L., to Uniroyal, Inc. Polyurethane spray composition containing lactone viscosity modifier. 4,195,148, Cl. 528-48.000.
Hager, Adolph G.; and Krzyzkowski, Philip F., to United States of America, Army. Method and apparatus for frit-sealing high temperature CRT faceplate to conventional CRT envelope. 4,194,643, Cl. 220-2.10A.
Hager, James D.: *See*—
Fischer, David J.; McCandless, James A.; and Hager, James D., 4,194,814, Cl. 351-160.00R.
Hahn, Guerry L.: *See*—
Baker, Gerald S.; and Hahn, Guerry L., 4,194,718, Cl. 251-14.000.
Hajimoto, Yoshioki: *See*—
Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, 4,194,812, Cl. 350-357.000.
Hale, Peter: *See*—
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Hall, Leo M., to University of Alabama, The Board of Trustees of the. Albumin-dye complex for fatty acid determination. 4,195,126, Cl. 435-11.000.
Hall, Lowell R., to Caterpillar Tractor Co. Control valve with bypass means. 4,194,532, Cl. 137-596.000.
Hallstedt, Karl G. A.: *See*—
Svensson, Bengt H.; Lindberg, Lars G.; and Hallstedt, Karl G. A., 4,194,796, Cl. 308-9.000.
Hamada, Hideo: *See*—
Usui, Keizaburo; Hayama, Isao; Hamada, Hideo; and Yamamuro, Sigeaki, 4,194,608, Cl. 192-0.092.
Hamer, David E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,195,027, Cl. 260-397.200.
Hamer, George D.: *See*—
Downing, Brian Y.; and Hamer, George D., 4,195,115, Cl. 428-482.000.
Hamilton, Cecil E. Apparatus for releasably retaining articles in pockets and the like. 4,194,271, Cl. 24-3.00R.
Hammann, Ingeborg: *See*—
Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, 4,195,082, Cl. 424-216.000.
Hammond, Kenneth G.; and Schlicht, Raymond C., to Texaco Inc. Polyurethane of neopentyl glycol-phosphosulfurized polyolefin and lubricant containing same. 4,194,981, Cl. 252-46.700.
Hampshire, Michael J.; Poole, Norman J.; and Parkes, John, to Ward & Goldstone Limited. Sound generator. 4,195,284, Cl. 340-384.00E.
Hana, Norman A.: *See*—
Drennan, Herman R.; and Hana, Norman A., 4,195,047, Cl. 264-17.000.
Hance, Sammy M. Concrete lifter. 4,194,726, Cl. 254-133.00R.
Hanisch, Horst: *See*—
Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, 4,195,141, Cl. 525-328.000.
Hannibal, Alan J., to Lord Corporation. Flexible drive coupling. 4,194,372, Cl. 64-11.00R.
Hans List: *See*—
Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, 4,194,401, Cl. 73-730.000.
Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,194,484, Cl. 123-195.00C.
Happ, Lawrence R.: *See*—
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Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, to Canon Kabushiki Kaisha Toshitama Hara. Electrochromic device. 4,194,812, Cl. 350-357.000.
Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Ltd. 4-Alkoxy-3,5-diamino-α,α,α-trifluoromethyl-benzene and manufacture thereof and hardener for polyurethane elastomer thereof. 4,195,037, Cl. 260-575.000.
Haraszti, Ibolya: *See*—
Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, 4,195,314, Cl. 455-185.000.
Harata, Motowo: *See*—
Shiomi, Masanao; Yokoya, Yuuji; and Harata, Motowo, 4,194,760, Cl. 280-661.000.
Harden, Harry J.: *See*—
Easton, John T.; and Harden, Harry J., 4,194,717, Cl. 249-192.000.
Hardesty, George K. C.: *See*—
Dice, Harry E., Sr., 4,194,379, Cl. 70-421.000.
Hargraves, Melvin J.; and Peters, Clifford M., to W-K-M Wellhead Systems, Inc. Control valve having integral visual indicator for fluid safety systems. 4,194,529, Cl. 137-557.000.
Harjar, Martin J., to Nordson Corporation. Electrostatic spray coating gun. 4,194,696, Cl. 239-707.000.

Harms, Jack L.; and Seberg, Charles H., to Abbott Laboratories. Winged catheter placement assembly. 4,194,504, Cl. 128-214.400.
Harp, Raymond T.: *See—*
Smith, Walter A.; and Harp, Raymond T., 4,195,339, Cl. 364-200.000.
Harris, William R., Jr. Open vehicle lighting system utilizing detachable vehicle operator helmet mounted light. 4,195,328, Cl. 362-72.000.
Hart, C. Arthur, to Research Triangle Institute. Air drying of refractory hardwoods. 4,194,298, Cl. 34-94.000.
Hartdegen, Frank J.; and Swann, Wayne E., to W. R. Grace & Co. Process for immobilizing proteins. 4,195,127, Cl. 435-174.000.
Hartwig, Karl; and Waibel, Gottfried, to AGFA-Gevaert, A.G. Optical copier. 4,194,831, Cl. 355-3.00R.
Hashmall, Frank, to L. M. Rabinowitz & Co., Inc. Apparatus for processing hook and eye fasteners. 4,194,937, Cl. 156-73.100.
Haslhofer, Hubert, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Apparatus for supporting two universal joint shafts and equipment comprising a strip-treating stand adapted to be driven by said universal joint shafts. 4,194,279, Cl. 29-281.500.
Hass, Hansjurgen: *See—*
Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, 4,195,141, Cl. 525-328.000.
Hass, Martin A., to Hass, Martin A. Artificial teeth that minimize stresses on denture supporting tissue. 4,194,288, Cl. 433-197.000.
Hatch, David A., to PINTEK, Inc. Connector for flat ribbon cable. 4,194,803, Cl. 339-99.00R.
Hatherly, David G., to Erco Industries Limited. Process for producing chlorate and chlorate cell construction. 4,194,953, Cl. 204-95.000.
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, to Kao Soap Co., Ltd. Method for increasing flexural strength of cement compositions. 4,194,919, Cl. 106-90.000.
Hauni-Werke Korber & Co. KG.: *See—*
Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.
Hausen, Peter; and Schulz, Klaus-Dieter, to Hoesch Werke Aktiengesellschaft. Method of producing steel with the lowest possible sulfur content by desulfurization of pig iron with magnesium coke. 4,194,903, Cl. 75-58.000.
Havlick, Richard S.: *See—*
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Hawrylo, Frank Z., to RCA Corporation. Ohmic contact for P type indium phosphide. 4,195,308, Cl. 357-67.000.
Hayama, Isao: *See—*
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Hayashi, Masaki; Kori, Seiji; and Okada, Takanori, to Ono Pharmaceutical Co. Ltd. Trans-Δ^2-prostaglandin analogues. 4,195,182, Cl. 180-53.000.
Hayashi, Takao; Sakanaka, Yasuhiro; and Shimizu, Akihiko, to Toyo Soda Manufacturing Company, Ltd. Process for producing powdery rubber. 4,194,999, Cl. 260-17.00R.
Heath, Richard C., to Heath, Richard Charles. Fire extinguishers. 4,194,569, Cl. 169-26.000.
Heath, Richard Charles: *See—*
Heath, Richard C., 4,194,569, Cl. 169-26.000.
Hecht, Gert: *See—*
Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, 4,194,798, Cl. 308-189.00R.
Hedel, Kurt K., to General Electric Company. DC to DC voltage converter. 4,195,333, Cl. 363-21.000.
Hedrich, Eberhard. Gear-shift control for bicycle transmission. 4,194,408, Cl. 74-217.00B.
Heitkamper, Peter: *See—*
Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, 4,195,032, Cl. 260-453.0PH.
Heller, Alwin: *See—*
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Heller, Robert D., to Medical Plastics Laboratory, Inc. Anti-choking manikin. 4,194,303, Cl. 35-17.000.
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Lisowski, Walter E., 4,194,459, Cl. 114-221.00R.
Henkel Corporation: *See—*
Floyd, Don E., 4,195,152, Cl. 528-87.000.
Hennequin, Petrus J., to Hunter Douglas International N.V. End piece for the bottom rail of a venetian blind. 4,194,551, Cl. 160-178.00R.
Henning, James E.: *See—*
Crosby, Edward G.; Henning, James E.; and Hornbeck, Frederick C., 4,195,114, Cl. 428-404.000.
Henrion, Michael Andre R.; and van Brussel, Marcel A., to International Standard Electric Corporation. Signal transfer system for time division switching systems. 4,195,205, Cl. 370-10.000.
Hentze, Bernhard K. Chain guard and methods of making and using the same. 4,194,413, Cl. 74-611.000.
Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., to Tennant Company. Scrubbing machine with water regeneration. 4,194,263, Cl. 15-353.000.
Herrera, Alberto P.; and Vieto, Sebastian A. Insecticidal use of orange juice essence oil. 4,195,080, Cl. 424-186.000.
Herres, Norbert: *See—*
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Herron, David K.; and Whitesitt, Celia A., to Eli Lilly and Company. 1,3-Disubstituted 2-azetidinone antibitotics. 4,195,021, Cl. 260-239.00A.
Herzig, Eberhard: *See—*
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
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Hess, Gerald W., to Chambers Corporation. Oven hinge mechanism including detent lock. 4,194,321, Cl. 49-389.000.
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Hewitt, William L., to Cam-Stat Incorporated. Intermittent pilot ignition system. 4,194,875, Cl. 431-45.000.
Heyman, Joseph S., to United States of America, National Aeronautics and Space Administration. CdS Solid state phase insensitive ultrasonic transducer. 4,195,244, Cl. 310-311.000.
Hickerson, Frederick R. Fluid control valve. 4,194,694, Cl. 239-533.100.
Hicks, Bradford W., to Eaton Corporation. Geared torque selector. 4,194,586, Cl. 180-24.090.
Hidaki, Ichiro. Four-cycle spark ignition internal combustion engine. 4,194,473, Cl. 123-119.00A.
Hightower, Roger W. Folding step for pickup trucks. 4,194,754, Cl. 280-166.000.
Higosaki, Nobuyuki: *See—*
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Hildebrand, Dietrich; and Gribnau, Thomas, to Bayer Aktiengesellschaft. Polymeric carrier bound ligands. 4,195,128, Cl. 435-178.000.
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., to Dynetics Engineering Corp. Verifying insertion system apparatus and method of operation. 4,194,685, Cl. 235-375.000.
Hille, Eduard. Apparatus for laying fiber fleeces or the like on a moving withdrawal belt. 4,194,270, Cl. 19-163.000.
Hillery, Herbert V., to United States of America, Navy. Tuned electrolytic detector. 4,195,280, Cl. 367-171.000.
Hillery, Herbert V., to United States of America, Navy. Variable frequency acoustic filter. 4,195,361, Cl. 367-149.000.
Hillmann, Hans; and Springer, Engelbert, to Vacuumschmelze GmbH. Superconducting composite conductor and method of manufacturing same. 4,195,199, Cl. 174-128.00S.
Hindersinn, Raymond R.: *See—*
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Hinterkeuser, Wilhelm; Herres, Norbert; and Reitemeyer, Paul, to Reifenhauser KG. Apparatus for the cooling, calibrating and straightening of a plate-shaped continuously extruded synthetic-resin strand. 4,194,872, Cl. 425-72.00R.
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Hitachi Chemical Company, Ltd.: *See—*
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Ataka, Saburo; Inao, Kiyohisa; Tada, Kanetosi; Okamura, Yoshinori; and Kimura, Isamu, 4,195,230, Cl. 250-483.000.
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Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, 4,195,246, Cl. 313-292.000.
Kajiwara, Toshiyuki, 4,194,382, Cl. 72-243.000.
Kimura, Tomoaki; and Nishino, Tadashi, 4,194,553, Cl. 164-87.000.
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Hitachi Metals: *See—*
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Hodnett, C. Leroy. Wood scoop. 4,194,778, Cl. 294-9.000.
Hodr, Miloslav; Holub, Josef; and Stefek, Jiri, to Vyzkumny ustav bavlnarsky. Arrangement for guiding a weft thread end under tension toward a fabric fell in travelling-wave looms. 4,194,537, Cl. 139-194.000.
Hoechst Aktiengesellschaft: *See—*
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,878, Cl. 8-39.00B.
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,879, Cl. 8-39.00B.
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,880, Cl. 8-41.00B.

Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,881, Cl. 8-41.00B.
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,882, Cl. 8-41.00B.
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Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.
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Holz, Rudolf; and Haberhauer, Helmuth, 4,194,828, Cl. 355-3.0DD.
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Kleiner, Hans-Jerg; and Dursch, Walter, 4,195,035, Cl. 260-545.00P.
Schermann, Walter; Holst, Arno; and Fischer, Wilhelm, 4,194,995, Cl. 260-14.000.
Wacker, Adolf, 4,195,125, Cl. 435-2.000.

Hoesch Werke Aktiengesellschaft: *See*—
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Hofbauer, Rupert; and Svoboda, Josef, to TMC Corporation. Testing apparatus. 4,194,387, Cl. 73-9.000.

Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating arthropods with 0-alkyl-0-trifluoromethylsulphonylphenyl-thiono (thiol)-phosphoric acid esters. 4,195,082, Cl. 424-216.000.

Hoffmann, Karl-Heinz: *See*—
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Hoffmann, Kurt, to Siemens Aktiengesellschaft. Process for the production of a single transistor memory cell. 4,194,283, Cl. 29-571.000.

Hoffmann-La Roche Inc.: *See*—
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Wells, Robert J.; and Murphy, Peter T., 4,195,179, Cl. 542-444.000.

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Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.

Holbrook, Fred D.; and Holbrook, Perry, to Columbia Machine, Inc. Method and apparatus for washing mixing containers. 4,194,925, Cl. 134-24.000.

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Holbrook, Fred D.; and Holbrook, Perry, 4,194,925, Cl. 134-24.000.

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Holz, Rudolf; and Haberhauer, Helmuth, to Hoechst Aktiengesellschaft. Process and apparatus for developing an electrostatic latent image. 4,194,828, Cl. 355-3.0DD.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.

Honda, Makoto: *See*—
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Troutman, Gary L., 4,195,204, Cl. 370-84.000.

Honeywell Information Systems Inc.: *See*—
Joyce, Thomas F., 4,195,340, Cl. 364-200.000.
Joyce, Thomas F.; and Panepinto, William, Jr., 4,195,341, Cl. 364-200.000.
Joyce, Thomas F.; and Holtey, Thomas O., 4,195,342, Cl. 364-200.000.
Joyce, Thomas F., 4,195,343, Cl. 364-200.000.

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Walker, Leigh E., 4,195,137, Cl. 525-317.000.

Hoover Universal, Inc.: *See*—
Lambarth, Edwin H., 4,195,053, Cl. 264-533.000.

Hopkins, David A., to Valeron Corporation, The. Face milling cutter. 4,194,860, Cl. 407-42.000.

Hopper, Thomas P., to Insulating Shade (Limited Partnership). Apparatus for insulating against conductive, convective and radiant heat transmission. 4,194,550, Cl. 160-121.00R.

Horie, Satoru: *See*—
Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, 4,195,203, Cl. 179-1.0GD.

Horimoto, Masayuki: *See*—
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Hormann, Karl; and Weigand, Hans, to Kugelfischer Georg Schafer & Co. Bearing-race ring with lubricant and cooling channels. 4,194,797, Cl. 308-187.000.

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Hornbeck, Frederick C.: *See*—
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Hoshino, Yasutaka; and Scott, Fredric W., to Cornell Research Foundation, Inc. Propagation of feline infectious peritonitis virus in tissue cultures. 4,195,130, Cl. 435-235.000.

Hotto, Robert: *See*—
Lester, Robert W.; and Hotto, Robert, 4,194,833, Cl. 355-14.0CU.

Houdaille Industries, Inc.: *See*—
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Houghton, Joseph Y., co-trustees: *See*—
Burke, Oliver W., Jr., deceased; and Humphreys, Victor T., 4,194,920, Cl. 106-308.00M.

Howmet Corporation: *See*—
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Hoy, John; Emby, Gordon N.; and Meerholz, Edgar F. Veterinary compositions and method for controlling anthropod ectoparasites. 4,195,083, Cl. 424-200.000.

Hoy, Kenneth L.: *See*—
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Hoyt, Donald L.: *See*—
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Hrivnak, John G., to Sandvik Conveyor GmbH. Conveyor-belt system. 4,194,614, Cl. 198-487.000.

Hsu, Mitchell M. C. Self-aligning ring joint for joining concrete pipes having ends adapted for use therewith. 4,194,766, Cl. 285-110.000.

Huang, Liang H.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.

Huang, Tracy J.: *See*—
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Hudson, Thomas J.; Huni, Jean-Paul R.; Potocnik, Vinko; and MacMillan, Donald W., to Alcan Research and Development Limited. Electrolytic reduction cells. 4,194,959, Cl. 204-243.00R.

Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, to Minnesota Mining and Manufacturing Company. Inhibitor removing bath for direct positive color photographic development. 4,194,911, Cl. 430-357.000.

Hughes Aircraft Company: *See*—
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Hughes, Michael P.: *See*—
Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.

Huizinga, Jan Jakob: *See*—
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Humphreys, Victor T.: *See*—
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Humphries, Richard L., to Kliklok Corporation. Leakproof container. 4,194,676, Cl. 229-16.00A.

Hunger, Klaus; and Ribka, Joachim, to Hoechst Aktiengesellschaft. Dichloro-phenyl-azo-acetoacetylamino-benzimidazolone pigments. 4,195,020, Cl. 260-157.000.

Huni, Jean-Paul R.: *See*—
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Hunter Douglas International N.V.: *See*—
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Huostila, Markku; and Haapsaari, Timo, to Oy Nokia Ab & Valmet Oy. Transferring a web from a pick-up fabric to a flow-through drying wire. 4,194,947, Cl. 162-207.000.

Hurd, Donald J.; and Morgan, Gerard J., III. Plastic locking ring and method of making. 4,194,772, Cl. 292-256.650.

Hurlemann, Ernst: *See*—
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Hurler, Herbert T.: *See*—
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Hurlock, John R.; and Ballweber, Edward G., to Nalco Chemical Company. Phosphorus acid to stabilize quaternized polyacrylamide. 4,195,003, Cl. 260-29.4UA.

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Huth, Gerhard: *See*—
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Huzyak, Paul, to Gulf & Western Manufacturing Company. Modular transducer assembly for rolling mill roll adjustment mechanism. 4,194,383, Cl. 72-245.000.

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I.E.I. Proprietary Limited: *See*—
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I-T-E Imperial Corporation: *See*—
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Ibigawa Electric Industry Ltd.: *See*—
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Ichisaka, Teruo; and Ikegami, Tadao, to Chlorine Engineers Corp., Ltd. Method of making a bipolar electrode. 4,194,670, Cl. 228-179.000.
ICI Americas Inc.: *See*—
Earley, Roger A., 4,195,189, Cl. 568-730.000.
Markiewitz, Kenneth H.; and Restaino, Alfred J., 4,195,146, Cl. 526-261.000.
Ida, Masatoshi, to Olympus Optical Co., Ltd. Apparatus for detecting information index signal from magnetic tape. 4,195,319, Cl. 360-72.100.
Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Hard alloyed powder and method of making the same. 4,194,900, Cl. 75-0.50C.
Ihara Chemical Industry Co., Ltd.: *See*—
Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, 4,195,037, Cl. 260-575.000.
Iida, Takamitsu: *See*—
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Ikegai Tekko Kabushiki Kaisha: *See*—
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Imada, Yusuke, to Sanyo Kiki Kabushiki Kaisha. Speedup device for reciprocating cylinders. 4,194,436, Cl. 91-420.000.
Imai, Hirokatsu: *See*—
Matsumoto, Chiaki; Imai, Hirokatsu; and Okawa, Masaru, 4,194,730, Cl. 266-275.000.
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Bobbin, Eldred G. E., 4,195,168, Cl. 528-495.000.
Goulding, Terence; and Orton, Michael L., 4,195,139, Cl. 525-441.000.
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Ingalls, Charles C. Harvest separator. 4,194,346, Cl. 56-328.00R.
Inoue, Mitsuhiro; and Maeda, Yo, to Hitachi Chemical Company, Ltd. Frame of a game racket. 4,194,738, Cl. 273-73.00C.
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, to Kao Soap Co., Ltd. Hydroxyalkyl-etherified glycolipid ester. 4,195,177, Cl. 536-116.000.
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Institut Francais du Petrole: *See*—
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Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR: *See*—
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Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.
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Intel Corporation: *See*—
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International Business Machines Corporation: *See*—
Andresen, Rolf, 4,195,320, Cl. 360-78.000.
Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.
Cox, Allen R.; Pascual, Rafael; and Rigbey, Leonard J., 4,195,322, Cl. 360-103.000.
Crosby, Edward G.; Henning, James E.; and Hornbeck, Frederick C., 4,195,114, Cl. 428-404.000.
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Feistel, Horst, 4,195,200, Cl. 178-22.000.
Jambotkar, Chakrapani G., 4,195,307, Cl. 357-56.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,099, Cl. 426-536.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,100, Cl. 426-536.000.
International Lead Zinc Research Organization, Inc.: *See*—
Radtke, Schrade F.; Carr, Dodd S.; and Kronstein, Max, 4,195,002, Cl. 260-29.20E.
International Nickel Company, Inc., The: *See*—
Luch, Daniel, 4,195,117, Cl. 428-626.000.
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Henrion, Michael Andre R.; and van Brussel, Marcel A., 4,195,205, Cl. 370-10.000.
International Telephone and Telegraph Corporation: *See*—
Friese, Egon F., 4,195,219, Cl. 219-388.000.
November, Milton H., 4,194,385, Cl. 73-1.00R.
Okerblom, Charles L., 4,194,722, Cl. 251-305.000.
VanEtten, James P., 4,195,299, Cl. 343-103.000.
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Bingham, David, 4,195,266, Cl. 330-9.000.
Iowa State University Research Foundation, Inc.: *See*—
Kraus, George A., 4,195,026, Cl. 260-346.110.
Irick, Gether, Jr.; and Wang, Richard H. S., to Eastman Kodak Company. Piperidinyl hydrogen 2-hydroxyalkyl phosphates and metal salts thereof which compounds are useful as ultraviolet stabilizers for organic compositions. 4,194,989, Cl. 252-400.00A.
Ishihara, Masanobu: *See*—
Sato, Yasushi; Ibaragi, Toshio; Ishihara, Masanobu; and Honda, Makoto, 4,195,136, Cl. 525-71.000.
Ishii, Toshiaki; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Elevator landing control apparatus. 4,194,594, Cl. 187-29.00R.
Ishikawa, Masaoki. Method for converting an analog voltage to a digital value free from conversion errors, and an integrating type analog-to-digital converter capable of eliminating conversion errors. 4,195,283, Cl. 340-347.0NT.
Ishizaka, Teisuke: *See*—
Satoh, Akira; and Ishizaka, Teisuke, 4,194,414, Cl. 74-674.000.
Italiaander, Albertus; Kruk, Arie; Nat, Willem G.; and Rees, Nicolaas M. J., to Hoogovens Ijmuiden, B.V. Device for controlling a longitudinally movable driving ..eans. 4,194,434, Cl. 91-20.000.
Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, to Canon Kabushiki Kaisha. Device for confirming the depth of focus of a camera. 4,194,819, Cl. 354-43.000.
Ito, Tadashi: *See*—
Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.
Ito, Thomas I.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.
Itoh, Takahisa, to Toyo Kogyo Co., Ltd. Foldable seat structures for automobiles. 4,194,782, Cl. 296-65.00R.
Itzuka, Haruhiko: *See*—
Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, 4,194,417, Cl. 74-866.000.
Iwai, Kazuhiro: *See*—
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.
Iwai, Shinji: *See*—
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, to Nissan Motor Company, Limited. Governor having ability of removing dust from working fluid in automatic transmission. 4,194,518, Cl. 137-15.000.
Iwaoka, Kazuo; Toh, Tagao; and Fukada, Minoru, to Matsushita Electric Industrial Co., Ltd. Catalyst element for cleaning exhaust gases. 4,195,063, Cl. 422-180.000.
Iwata, Masao, to Hitachi Metals. Fe/Cr/Co Permanent magnetic alloys and method of production thereof. 4,194,932, Cl. 148-102.000.
Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, to Hitachi, Ltd. Support structure for directly-heated cathode of cathode ray tube. 4,195,246, Cl. 313-292.000.
J. M. Voith GmbH: *See*—
Pfalzer, Lothar; and Fischer, Siegbert, 4,194,968, Cl. 209-3.000.
J. R. Pierson Building Systems Limited: *See*—
Peirson, John R.; and Lynch, Deane A. L., 4,194,328, Cl. 52-86.000.
Jablonski, Werner: *See*—
Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, 4,194,455, Cl. 110-251.000.
Jackson, Robert V., to McCulloch Corporation. Self generating ignition system. 4,194,482, Cl. 123-148.0CC.
Jaeggi, Knut A.: *See*—
Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,195,090, Cl. 424-263.000.
Jaffe, Michael L.: *See*—
Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., 4,195,052, Cl. 264-210.500.

Davis, Herbert L.; Jaffe, Michael L.; and Besso, Michael M., 4,195,161, Cl. 528-309.000.

Jagenberg Werke Aktiengesellschaft: *See*—
Knoll, Heiko; and Kurth, Wilfried, 4,194,421, Cl. 83-62.100.

Jager, Klara B. E., heir: *See*—
Jager, Valentin, deceased; and Jager, Klara B. E., heir, 4,194,404, Cl. 74-44.000.

Jager, Tilo: *See*—
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.

Jager, Valentin, deceased; and by Jager, Klara B. E., heir. Crank assembly for reciprocating piston machines. 4,194,404, Cl. 74-44.000.

Jahns, Hans O., to Exxon Production Research Company. Method for reducing frost heave of refrigerated gas pipelines. 4,194,856, Cl. 405-130.000.

Jakobs, Ewa: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Piociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Jambotkar, Chakrapani G., to International Business Machines Corporation. Fabricating integrated circuits incorporating high-performance bipolar transistors. 4,195,307, Cl. 357-56.000.

Jamet, Michel: *See*—
Bertrand, Pierre; Jamet, Michel; Strub, Jacques; and Walter, Eric, 4,195,337, Cl. 364-106.000.

Jansen, Philip: *See*—
Swanson, George G.; Strom, Robert E.; and Jansen, Philip, 4,194,300, Cl. 34-217.000.

Jansen, Rolf: *See*—
Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, 4,195,173, Cl. 536-17.00R.

Jansson, Sven A.: *See*—
Gransell, Ake; Jansson, Sven A.; and Sporrong, Malte, 4,194,922, Cl. 134-1.000.

Jaros, Philip W. Latching device. 4,194,773, Cl. 292-267.000.

Jasper, Mark F., to American Hospital Supply Corporation. Shipping container and blank for forming same. 4,194,678, Cl. 229-23.00R.

Jennings, Frederick A.; and Bowen, Thomas C., to Sportscoach Corporation. Shock isolation coupling. 4,194,373, Cl. 64-14.000.

Jervis B. Webb Company: *See*—
MacMunn, George D.; and Kavieff, Shelden M., 4,195,347, Cl. 364-478.000.

JFL Development Company: *See*—
Martuch, Leon L., 4,194,936, Cl. 156-67.000.

JLG Industries, Inc.: *See*—
Grove, John L., 4,194,639, Cl. 212-59.00R.
Grove, John L.; and Wagner, Gregg A., 4,194,723, Cl. 254-9.90C.

Joekel, Alfred, to Balcke-Durr Aktiengesellschaft. Device for the cold working of heat exchanger tubing for the attachment of spiral fins. 4,194,381, Cl. 72-100.000.

John Thomas Batts, Inc.: *See*—
Garrison, Judd F., 4,194,274, Cl. 24-248.00R.

Johns-Manville Corporation: *See*—
Byrd, Carlisle O., Jr., 4,194,282, Cl. 29-451.000.

Johnson, Archie L. Car washing method and apparatus. 4,194,923, Cl. 134-6.000.

Johnson, Edwin L.: *See*—
Peniston, Quintin P.; and Johnson, Edwin L., 4,195,175, Cl. 536-20.000.

Johnson, George C.: *See*—
Chung, Harold S.; Johnson, George C.; and Huang, Tracy J., 4,194,969, Cl. 209-5.000.

Johnson & Johnson: *See*—
Ness, Irving S.; and Fechillas, Michael R., 4,194,507, Cl. 128-287.000.

Johnson, Stanley N.: *See*—
Kenny, Peter; and Johnson, Stanley N., 4,194,790, Cl. 299-79.000.

Johnson, Thomas L. Tool holder and components thereof. 4,194,713, Cl. 248-231.000.

Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., to Swift & Company. Handling pork loins. 4,194,267, Cl. 17-52.000.

Jones, Eric. M., to Karl Storz Endoscopy-America, Inc. Lamp changing module. 4,195,331, Cl. 362-368.000.

Jones, Howard: *See*—
Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, 4,195,023, Cl. 548-209.000.

Jones, John F.: *See*—
Li, George S.; and Jones, John F., 4,195,135, Cl. 525-69.000.

Jones, Russell L.; Keller, George E., II; and Wells, Rex C., to Union Carbide Corporation. Rapid pressure swing adsorption process with high enrichment factor. 4,194,892, Cl. 55-58.000.

Jonsson, Ulf L. P., to Gambro AB. Pressure monitoring device. 4,194,974, Cl. 210-90.000.

Jordi, Albert P.: *See*—
Thery, Jean P.; Alban, Claude M.; and Jordi, Albert P., 4,194,572, Cl. 169-66.000.

Jordon, Walter L. Self balancing diabolo top with attachment for vertical spinning. 4,194,316, Cl. 46-60.000.

Joy Manufacturing Company: *See*—
Bailey, Edward A.; and Ordway, James F., 4,194,579, Cl. 175-57.000.

Joyce, Thomas F., to Honeywell Information Systems Inc. First in first out activity queue for a cache store. 4,195,340, Cl. 364-200.000.

Joyce, Thomas F.; and Panepinto, William, Jr., to Honeywell Information Systems Inc. Initialization of cache store to assure valid data. 4,195,341, Cl. 364-200.000.

Joyce, Thomas F.; and Holtey, Thomas O., to Honeywell Information Systems Inc. Multi-configurable cache store system. 4,195,342, Cl. 364-200.000.

Joyce, Thomas F., to Honeywell Information Systems Inc. Round robin replacement for a cache store. 4,195,343, Cl. 364-200.000.

JSJ Corporation: *See*—
Kihnke, Lee S.; and Kruse, Gary, 4,194,341, Cl. 53-282.000.

Jumberca, S.A.: *See*—
Guell, Jose M. D., 4,194,374, Cl. 66-93.000.

Jumel, Yves, to Saft-Societe des Accumulateurs Fixes et de Traction. Non-aqueous electrolyte lithium battery with improved storage life. 4,195,123, Cl. 429-194.000.

Jung, Dieter, to Klockner-Werke AG. Compensation for differing heights of different molds clamped between the mold-clamping plates of an injection-molding machine. 4,195,048, Cl. 264-40.100.

Junzo Ozaki: *See*—
Yasuda, Mieji, 4,194,397, Cl. 73-314.000.

K-Tron International, Inc.: *See*—
Bullivant, Kenneth W.; and Van Ostenbridge, Ron, 4,194,649, Cl. 222-55.000.

Kabushiki Kaisha Fujikoshi: *See*—
Satoh, Akira; and Ishizaka, Teisuke, 4,194,414, Cl. 74-674.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kitagawa, Hiroshi, 4,194,425, Cl. 84-1.010.

Kabushiki Kaisha Meidensha: *See*—
Yoshida, Susumu; and Kimura, Kiyomitu, 4,195,257, Cl. 324-73.00R.

Kagan, Moisei R.: *See*—
Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Mack, Thomas A., 4,194,388, Cl. 73-37.000.

Kaiser, Mark E.; and Smith, Harry A., to Dow Chemical Company, The. Novel 2-amido- or 2-amino-alkyl ethers of polyhydric polyphenols and process for preparing same. 4,195,154, Cl. 528-98.000.

Kaiser, Thomas J., to Champion International Corporation. Paperboard corner protective device. 4,194,630, Cl. 206-586.000.

Kajiwara, Toshiyuki, to Hitachi, Ltd. Rolling mill. 4,194,382, Cl. 72-243.000.

Kakizaki, Kimio: *See*—
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,194,384, Cl. 72-325.000.

Kakugo, Masahiro: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-137.000.

Kakuichi Co. Ltd.: *See*—
Tanaka, Kenichi, 4,194,942, Cl. 156-433.000.

Kakutani, Nobuyasu, to Sharp Kabushiki Kaisha. Combined electronic digital scale and calculator storing selectable programs. 4,195,348, Cl. 364-562.000.

Kalasek, Karl, to Vereinigte Edelstahlwerke Aktiengesellschaft, Firma. Sterilization apparatus for infusion solutions or the like, filled in containers. 4,195,061, Cl. 422-109.000.

Kalfoglou, George, to Texaco Inc. Surfactant oil recovery method for use in high temperature formations containing water having high salinity and hardness. 4,194,565, Cl. 166-275.000.

Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia. Device for discrete control of thyristor-pulse converters. 4,195,236, Cl. 307-252.00K.

Kalinichenko, Anatoly Y., to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia. Digital control device for multiphase thyristor-pulse d.c. converter. 4,195,336, Cl. 363-137.000.

Kameyama, Shoji: *See*—
Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.

Kanazawa, Tadashi: *See*—
Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.

Kano, Gota: *See*—
Takagi, Hiromitsu; Kano, Gota; and Teramoto, Iwao, 4,194,927, Cl. 148-1.500.

Kansai Paint Co., Ltd.: *See*—
Fukui, Saburo; Yamamoto, Tsutomu; and Iida, Takamitsu, 4,195,129, Cl. 435-182.000.

Kao Soap Co., Ltd.: *See*—
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,195,177, Cl. 536-116.000.

Karamian, Narbik A. Method for assaying endotoxins. 4,195,225, Cl. 250-373.000.

Karl Mayer Textilmaschinen Fabrik GmbH: *See*—
Kohl, Karl, 4,194,943, Cl. 156-441.000.

Karl Storz Endoscopy-America, Inc.: *See*—
Jones, Eric. M., 4,195,331, Cl. 362-368.000.

Karlov, Frank J.: *See*—
Groh, Allen R.; Karlov, Frank J.; and Happ, Lawrence R., 4,194,744, Cl. 274-37.000.

Karlsson, Ulf R., to L-LT-Produkter. Boot blank. 4,194,308, Cl. 36-9.00R.

Kastinger, Hermann. Ski boot. 4,194,309, Cl. 36-117.000.

Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, to Nissan Motor Company, Limited. Apparatus for improving fuel economy of multi-cylinder I. C. engine followed by automatic transmission via hydrokinetic unit. 4,194,417, Cl. 74-866.000.

Kato, Kunioki: *See*—
Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.

Katona, Joseph W., to Mills Products, Inc. Self-sealing solar collector shield. 4,194,334, Cl. 52-397.000.

Kaufman, Jacquelyn: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.

Kavieff, Shelden M.: *See*—
MacMunn, George D.; and Kavieff, Shelden M., 4,195,347, Cl. 364-478.000.

Kawagoe, Hiroshi: *See*—
Ohsawa, Mitsuo; and Kawagoe, Hiroshi, 4,194,743, Cl. 274-1.00E.

Kawai Musical Instrument Mfg. Co. Ltd.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,194,426, Cl. 84-1.240.
Deutsch, Ralph, 4,194,427, Cl. 84-1.240.

Kawai, Shigeyuki: *See*—
Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.

Kawakatsu, Yasuyuki: *See*—
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.

Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, to Seitetsu Kagaku Co., Ltd. Process for producing p-hydroxybenzaldehyde. 4,195,041, Cl. 260-600.00R.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Sato, Masato; and Inoue, Takemi, 4,194,460, Cl. 115-73.000.
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,194,930, Cl. 148-16.600.

KB-Denver, Inc.: *See*—
Pounds, Walter R.; and Dunlap, Bill D., 4,195,210, Cl. 200-159.00A.

Kearns, Paul. Johnny bolt cutter. 4,194,286, Cl. 30-226.000.

Keirns, Michael L.: *See*—
Martin, Ernest N.; and Keirns, Michael L., 4,194,651, Cl. 222-108.000.

Keirsey, James L.: *See*—
Baker, Clifford B.; and Keirsey, James L., 4,194,519, Cl. 137-15.100.

Keller, George E., II: *See*—
Jones, Russell L.; Keller, George E., II; and Wells, Rex C., 4,194,892, Cl. 55-58.000.

Keller Research & Development, Inc.: *See*—
Keller, Russell E., 4,194,861, Cl. 408-109.000.

Keller, Russell E., to Keller Research & Development, Inc. Compact dowel hole spacing and drilling device. 4,194,861, Cl. 408-109.000.

Kelly, Leonard. Method and apparatus for sorting radioactive material. 4,194,634, Cl. 209-589.000.

Kelsey Hayes Co.: *See*—
Evans, Anthony C.; and Goering, Karl, 4,194,597, Cl. 188-73.500.

Kempka, Dorothy E. Garbage can lock. 4,194,774, Cl. 292-304.000.

Kennametal Inc.: *See*—
Montgomery, Robert H., Jr.; and Oaks, Seibert S., 4,194,791, Cl. 299-86.000.

Kennington, Frank W.; and Dim[illegible]acopoulos, Panayotis C. Quadrant drive. 4,194,415, Cl. 74-805.000.

Kenny, Peter; and Johnson, Stanle[illegible]l., to Coal Industry (Patents) Ltd. Rock cutting tip inserts. 4,194,7[illegible] Cl. 299-79.000.

Kepler, James L., to Allis-Chalmer[illegible]Corporation. Spherical valve seal piston detecting and locking arrangement. 4,194,528, Cl. 137-554.000.

Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See*—
Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, 4,194,455, Cl. 110-251.000.

Kesling, Haven S., Jr.; and Zehner, Lee R., to Atlantic Richfield Company. Preparation of unsaturated monoesters by catalytic oxidative carbonylation of diolefins. 4,195;184, Cl. 560-207.000.

Kesling, Peter C. Method for molding air holes into a tooth positioning and retaining appliance. 4,195,046, Cl. 264-16.000.

Keyes Fibre Company: *See*—
Lowery, Louie R., 4,194,781, Cl. 294-61.000.

Khalandovsky, Idel N.: *See*—
Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Khorunzhy, Anatoly I.: *See*—
Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Kidd, Al J. Remotely controlled aircraft. 4,194,317, Cl. 46-76.00R.

Kihnke, Lee S.; and Kruse, Gary, to JSJ Corporation. Hand operated filling and sealing device. 4,194,341, Cl. 53-282.000.

Kilburn, James E.: *See*—
Safranko, John W.; Burnett, Craig R.; and Kilburn, James E., 4,194,924, Cl. 134-12.000.

Killebrew, John G.: *See*—
Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.

Killmeyer, Charles W., to PPG Industries, Inc. Apparatus for making pultruded product. 4,194,873, Cl. 425-93.000.

Kimbrough, Laurence B.; and Van Renssen, Marinus, to RCA Corporation. Apparatus for applying sealing material to a cathode-ray tube. 4,194,463, Cl. 118-409.000.

Kimura, Isamu: *See*—
Ataka, Saburo; Inao, Kiyohisa; Tada, Kanetosi; Okamura, Yoshinori; and Kimura, Isamu, 4,195,230, Cl. 250-483.000.

Kimura, Kiyomitu: *See*—
Yoshida, Susumu; and Kimura, Kiyomitu, 4,195,257, Cl. 324-73.00R.

Kimura, Tomoaki; and Nishino, Tadashi, to Hitachi, Ltd. Cooling and guide method and apparatus in a continuous casting machine. 4,194,553, Cl. 164-87.000.

Kimura, Yoshiharu: *See*—
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,195,177, Cl. 536-116.000.

Kimura, Yukichi: *See*—
Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.

King Industries, Inc.: *See*—
Gallacher, Lawrence V., 4,194,905, Cl. 75-101.0BE.

King, John F.: *See*—
Unsworth, William; King, John F.; and Bradshaw, Stephen L., 4,194,908, Cl. 75-168.00J.

King, Ray J., to Wisconsin Alumni Research Foundation. Apparatus for measuring microwave electromagnetic fields. 4,195,262, Cl. 455-67.000.

Kingsford, Ted I., to Plough, Inc. Adjustable cosmetic wiper. 4,194,848, Cl. 401-5.000.

Kinta, Manzo: *See*—
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,195,177, Cl. 536-116.000.

Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, to Hans List. Internal combustion engine having a noise suppressing encapsulation. 4,194,484, Cl. 123-195.00C.

Kirillov, Viktor I.: *See*—
Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,195,236, Cl. 307-252.00K.

Kiscaden, Roy W.: *See*—
Reed, Terry J.; Smith, Jack R.; and Kiscaden, Roy W., 4,195,231, Cl. 290-40.00R.

Kitagawa, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Key code generator. 4,194,425, Cl. 84-1.010.

Kitahara, Shinji: *See*—
Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, 4,195,203, Cl. 179-1.0GD.

Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,099, Cl. 426-536.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,100, Cl. 426-536.000.

Klauke, Erich: *See*—
Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, 4,195,082, Cl. 424-216.000.

Klein, Gustave J., to Revlon, Inc. Device in permanent waving. 4,194,294, Cl. 33-178.00B.

Kleiner, Hans-Jerg; and Dursch, Walter, to Hoechst Aktiengesellschaft. Alkane-bisalkyl-phosphinic anhydrides and process for the manufacture of alkane-phosphonic anhydrides and alkane-bis alkyl-phosphinic anhydrides. 4,195,035, Cl. 260-545.00P.

Klie, Wolfgang: *See*—
Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, 4,194,763, Cl. 280-784.000.

Kliklok Corporation: *See*—
Humphries, Richard L., 4,194,676, Cl. 229-16.00A.

Kling, Knut A., to Sandvik Aktiebolag. Axial bearing for rotary drill bit. 4,194,794, Cl. 308-3.800.

Klinger AG: *See*—
Deinlein-Kalb, Hans, 4,194,390, Cl. 73-61.00R.

Klockner-Werke AG: *See*—
Jung, Dieter, 4,195,048, Cl. 264-40.100.

Klomp, Franciscus M.; and Overmars, Marinus, to U.S. Philips Corporation. Packaged electric lamp. 4,194,623, Cl. 206-418.000.

Klose, Karl: *See*—
Bergmann, Udo; and Klose, Karl, 4,195,223, Cl. 250-216.000.

Knickerbocker, Robert H., to Siemon Company, The. Wire installing tool. 4,194,256, Cl. 7-107.000.

Knoll, Heiko; and Kurth, Wilfried, to Jagenberg Werke Aktiengesellschaft. Safety system for the drive of a synchronous cross cutter. 4,194,421, Cl. 83-62.100.

Knop, Hans G., to Dr. Ing. Rudolf Hell GmbH. Circuit arrangement for recognizing and adjusting color components. 4,194,839, Cl. 356-407.000.

Knopf, Robert J.; and Hoy, Kenneth L., to Union Carbide Corporation. Gradient polymers of two or more cyclic, organic, ring-opening, addition polymerizable monomers and methods for making same. 4,195,167, Cl. 528-408.000.

Knopf, Robert J.: *See*—
Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,195,160, Cl. 528-297.000.

Knotek, Jaroslav: *See*—
Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, 4,194,758, Cl. 280-605.000.

Knowles, Daniel H., to Corning Glass Works. Optical waveguide coating assembly. 4,194,462, Cl. 118-405.000.
Knox, Benjamin H.: *See*—
Frankfort, Hans R. E.; and Knox, Benjamin H., 4,195,051, Cl. 264-176.00F.
Kobayashi, Masahiro; and Yabuhara, Tadao, to Otsuka Chemical Co., Ltd. Process for stabilizing aqueous solution of acrylic or methacrylic hydrazide polymers. 4,195,007, Cl. 260-29.6HN.
Kober, Marvin, to O.K. Machine and Tool Corporation. Battery-powered wire wrapping tool and wrapping bit. 4,194,700, Cl. 242-7.170.
Kohl, Karl, to Karl Mayer Textilmaschinen Fabrik GmbH. Modified warp knitting machine for the production of netting by heat sealed weft insertion. 4,194,943, Cl. 156-441.000.
Kohler, Jurgen: *See*—
Schiek, Burkhard; and Kohler, Jurgen, 4,195,271, Cl. 333-161.000.
Koike, Wataro: *See*—
Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, 4,195,037, Cl. 260-575.000.
Koleske, Joseph V.: *See*—
Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,195,160, Cl. 528-297.000.
Kolobanov, Nikolai I.: *See*—
Borodin, Valerian A.; Sudakova, Lidia M.; and Kolobanov, Nikolai I., 4,194,538, Cl. 139-194.000.
Kolodziejczyk, Pawel: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.
Komuro, Katsusuke: *See*—
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.
Kondo, Yoshikazu: *See*—
Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, 4,194,900, Cl. 75-0.50C.
Konig, Klaus: *See*—
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Kono, Masao: *See*—
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Kooijmans, Petrus G.: *See*—
Van Acker, Eduard M. A. A. J.; Kooijmans, Petrus G.; and de Heer, Aart, 4,195,004, Cl. 260-29.6TA.
Kordt, Hans-Herbert: *See*—
Fitzler, Arno; and Kordt, Hans-Herbert, 4,194,801, Cl. 339-19.000.
Kori, Seiji: *See*—
Hayashi, Masaki; Kori, Seiji; and Okada, Takanori, 4,195,182, Cl. 180-53.000.
Korstad, Ralph J.: *See*—
Boussaid, Issam S.; Hoyt, Donald L.; and Korstad, Ralph J., 4,194,562, Cl. 166-245.000.
Kortbeek, Andras G. Th. G.; van der Nat, Adrianus A.; van der Linden Lemmers, Wilhelmina J. M.; and Sjardijn, Willem, to Shell Oil Company. Preparation of violet $TiCl_3$. 4,195,069, Cl. 423-492.000.
Kosmowski, Wojciech, to American Delphi, Inc. Shredder. 4,194,698, Cl. 241-236.000.
Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, to Bayer Aktiengesellschaft. Process for continuously working up solutions of the type accumulating in the phosgenation of monoamines. 4,195,032, Cl. 260-453.0PH.
Koster, Johannes: *See*—
Reichmann, Wolfgang; Konig, Klaus; and Koster, Johannes, 4,195,031, Cl. 260-453.00P.
Kostermeier, Karl H., to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Cutter block arrangement for wood chipping machines. 4,194,545, Cl. 144-230.000.
Kotval, Peshotan S.; and Strock, Harold B., to Union Carbide Corporation. Process for the production of refined metallurgical silicon. 4,195,067, Cl. 423-348.000.
Kowszyk-Gindifer, Zuzanna: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.
Koyo Seiko Company Limited: *See*—
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Kozuka, Mikio: *See*—
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Kraess, Henri; and Bloch, Paul, to Societe Anonyme dite: La Telephonie Industrielle et Commerciale - Telic. Multiple electromagnetic relay. 4,195,275, Cl. 335-120.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Puthawala, Anwer, 4,194,842, Cl. 366-76.000.
Krambrock, Wolfgang; and Lubbehusen, Paul, to Waeschle Maschinenfabrik GmbH. Method and apparatus for mixing loose material. 4,194,845, Cl. 366-159.000.
Krantz, Tibor; and Farge, Jean C., to Noranda Mines Limited. Wear resistant low alloy white cast iron. 4,194,906, Cl. 75-125.000.
Kratzer, Reinhold H.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.
Kraus, George A., to Iowa State University Research Foundation, Inc. Substituted furans from butenolides. 4,195,026, Cl. 260-346.110.
Krause, Werner A., to General Electric Company. Busway ground bus joint. 4,195,198, Cl. 174-94.00S.
Kress, George H.; and Delany, James F. Variable terrain vehicle. 4,194,584, Cl. 180-9.24R.
Kressel, Henry: *See*—
Ettenberg, Michael; and Kressel, Henry, 4,195,269, Cl. 332-7.510.
Krob, Erwin: *See*—
Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, 4,194,758, Cl. 280-605.000.
Kroll, Harley E.: *See*—
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Kronstein, Max: *See*—
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Kronwitter, Lotte, nee Staiber: *See*—
Messing, Manfred, 4,194,458, Cl. 114-39.000.
Krouse, Philip E.: *See*—
Margalit, Nehemiah; and Krouse, Philip E., 4,195,122, Cl. 429-194.000.
Kruger, Hermann, to Volkswagenwerk Aktiengesellschaft. Compact V-type internal combustion engine. 4,194,469, Cl. 123-54.00R.
Kruk, Arie: *See*—
Italiaander, Albertus; Kruk, Arie; Nat, Willem G.; and Rees, Nicolaas M. J., 4,194,434, Cl. 91-20.000.
Krumkalns, Eriks V.: *See*—
Benefiel, Robert L.; and Krumkalns, Eriks V., 4,194,899, Cl. 71-76.000.
Krupp-Koppers GmbH: *See*—
Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, 4,194,686, Cl. 235-376.000.
Kruse, Gary: *See*—
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Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor S.; and Safronov, Vladimir E. Semiconductor matrix for integrated read-only storage. 4,195,354, Cl. 365-105.000.
Krzyzkowski, Philip F.: *See*—
Hager, Adolph G.; and Krzyzkowski, Philip F., 4,194,643, Cl. 220-2.10A.
Kubiatowicz, James F., to Custom Concepts, Incorporated. Door alarm toy. 4,194,461, Cl. 116-77.000.
Kubota, Shin-ichi; and Horimoto, Masayuki, to Kurita Machinery Manufacturing Company Limited. Expressing plate for use in filter press. 4,194,977, Cl. 210-231.000.
Kuck, John H., to United States of America, Navy. Pulse doppler-radio proximity fuze. 4,195,295, Cl. 343-7.0PF.
Kuehner, Richard: *See*—
Bahel, Vijay O.; Kuehner, Richard; and Rosenberg, Richard H., 4,194,368, Cl. 62-238.000.
Kugelfischer Georg Schafer & Co.: *See*—
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Kugler, William E.: *See*—
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Kuhlman Corporation: *See*—
Macemon, Herbert J., 4,194,806, Cl. 339-263.00R.
Kuhn, S.A.: *See*—
Gerlinger, Frederic, 4,194,348, Cl. 56-377.000.
Kuhner, Gehard: *See*—
Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, 4,195,068, Cl. 423-455.000.
Kumata, Ken; and Namikawa, Hiroshi, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Reversibly photosensitive glass. 4,194,916, Cl. 106-47.00R.
Kume, Kazunari; and Nomura, Yasushi, to Citizen Watch Co., Ltd. Electronic timepiece. 4,194,351, Cl. 368-82.000.
Kummer, Joseph T., to Ford Motor Company. Fuel cell. 4,195,119, Cl. 429-38.000.
Kunise, Satoru: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,194,930, Cl. 148-16.600.
Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, to Texas Instruments Incorporated. Median spaced dummy cell layout for MOS random access memory. 4,195,357, Cl. 365-210.000.
Kurihara, Hideaki: *See*—
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Kurita Machinery Manufacturing Company Limited: *See*—
Kubota, Shin-ichi; and Horimoto, Masayuki, 4,194,977, Cl. 210-231.000.
Kurr, George W.; and Myers, Michael, to Federated Metals Corporation. Corrosion resistant URD cable. 4,195,197, Cl. 174-78.000.
Kurth, Wilfried: *See*—
Knoll, Heiko; and Kurth, Wilfried, 4,194,421, Cl. 83-62.100.
Kuster, Charles W.; and Renshaw, Floyd H., to AMP Incorporated. Junction box. 4,195,194, Cl. 174-59.000.
Kutno, Irving L.: *See*—
Smith, Douglas J.; and Kutno, Irving L., 4,194,305, Cl. 35-42.000.
Kuusik, Uno, to Chrysler Corporation. Two stage hydraulic governor. 4,194,520, Cl. 137-54.000.

Kuwahara, Heikichi: *See*—
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Kuyama, Hiroshi: *See*—
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Kwan, Larry I.: *See*—
Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., 4,194,808, Cl. 350-96.320.

Kwiecinski, James R., to Westinghouse Electric Corp. Polyester-amide-imide wire coating powder. 4,195,159, Cl. 528-288.000.

L-LT-Produkter: *See*—
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L. M. Rabinowitz & Co., Inc.: *See*—
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La Telemecanique Electrique: *See*—
Bouteille, Daniel; Thomasse, Andre; and Petrimaux, Eric, 4,194,533, Cl. 137-624.180.

Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., to Albert Rolland S.A. Furoyl- and thenoyl-aryloxyalkyl carboxylic acid derivatives, their preparation and their use in therapy. 4,195,093, Cl. 424-275.000.

Laging, Jerry D. Apparatus for pressure testing pipe. 4,194,389, Cl. 73-46.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes: *See*—
Galland, Denis; and Boursault, Jack, 4,194,535, Cl. 137-636.400.

Lake Chemical Co.: *See*—
Lytton, Donald B., 4,195,001, Cl. 260-28.00R.

Lalanne, Jean; Nivert, Jean-Pierre; and Tarascou, Daniel, to Societe Nationale Elf Aquitaine. Method for incinerating sludges. 4,194,454, Cl. 110-238.000.

Lambarth, Edwin H., to Hoover Universal, Inc. Method and apparatus for blow molding containers. 4,195,053, Cl. 264-533.000.

Lane, John E., to Parks-Cramer Company. Apparatus and method for gathering and displaying information. 4,194,349, Cl. 57-265.000.

Lange, Wilfried, to Fa. Dieter Haubold Industrielle Nagelgerate. Strip of joined fastening elements and method for its manufacture. 4,194,621, Cl. 206-343.000.

LaNieve, Herman L., III: *See*—
Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., 4,195,052, Cl. 264-210.500.

Laptev, Lev N.: *See*—
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Larsen, Harold S.: *See*—
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Lavagnino, Edward R.: *See*—
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Lavik, Ingvar, to A/S Finsam Industries Ltd. Apparatus for producing ice. 4,194,367, Cl. 62-138.000.

Lawrence, William A. P.; and Welchel, Robert J., to Elevator Equipment Co. Pressure and temperature compensating hydraulic valve. 4,194,534, Cl. 137-625.390.

Layden, Lawrence M.; and Thomson, James R., to Airco, Inc. Shape cutting apparatus. 4,194,727, Cl. 266-58.000.

Leach, George S.: *See*—
O'Connell, Timothy R.; and Leach, George S., 4,195,356, Cl. 365-189.000.

Leblanc, Marc; and Lepretre, Bernard, to Regie Nationale des Usines Renault. Breaker signal pick-up and shaping circuit. 4,194,481, Cl. 123-148.00E.

Ledin, Eric, to General Atomic. Locking support for nuclear fuel assemblies. 4,194,948, Cl. 176-87.000.

Ledman, Dale A.; and Spector, George. Love box. 4,194,629, Cl. 206-573.000.

Lee, Fred S., to Magnex Corporation. Thin film magnetic recording heads. 4,195,323, Cl. 360-113.000.

Leesona Corporation: *See*—
West, George A.; Arends, Albert W.; and Pickard, George L., 4,194,663, Cl. 226-139.000.

Leicht, John R., to Xerox Corporation. Moving permanent magnet limited motion actuator. 4,195,277, Cl. 335-229.000.

Lembeck, William. Food processor and auxiliary mixing bowl therefor. 4,194,697, Cl. 241-92.000.

Lembke, Herbert: *See*—
Ewald, Roland; and Lembke, Herbert, 4,194,719, Cl. 251-30.000.

Lemcoe, Meyer M.: *See*—
United States of America, National Aeronautics and Space Administration; Lemcoe, Meyer M.; and Pattee, Harry E., 4,195,279, Cl. 338-2.000.

Lemieux, Raymond U.; and Ratcliffe, R. Murray, to Chembiomed Ltd. Synthesis of 2-amino-2-deoxyglycoses and 2-amino-2-deoxyglycosides from glycals. 4,195,174, Cl. 536-18.000.

Lepretre, Bernard: *See*—
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Lermann, Peter: *See*—
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Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,194,821, Cl. 354-86.000.

Les Produits Associes LPA SA: *See*—
Woog, Philippe-Guy E., 4,195,329, Cl. 362-120.000.

Lester, Robert W.; and Hotto, Robert, to Static Systems Corporation. Electronic typewriter having an electronic display. 4,194,833, Cl. 355-14.0CU.

Leupelt, Uwe, to Siemens Aktiengesellschaft. Double reflector antenna with feed horn protection. 4,195,302, Cl. 343-704.000.

Levecque, Marcel A.; Battigelli, Jean A.; and Plantard, Dominique, to Saint-Gobain Industries. Method for making fibers from glass or other attenuable materials. 4,194,897, Cl. 65-5.000.

Levine, Robert Allan: *See*—
Bromberg, John R., 4,194,669, Cl. 228-120.000.

Lewis, Gary D., to Energy Conversion Devices, Inc. System for developing heat responsive film. 4,194,826, Cl. 354-299.000.

Lewis, Robert P., to Faser Industries. Sterilizable package and a method of packaging for sterilization. 4,194,622, Cl. 206-363.000.

Li, George S.; and Jones, John F., to Standard Oil Company. Thermoplastic nitrile resin blends. 4,195,135, Cl. 525-69.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, 4,195,306, Cl. 357-38.000.
Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, 4,195,314, Cl. 455-185.000.

Liebman, Arno J. Cardiac patient support. 4,194,732, Cl. 269-323.000.

Lindberg, Lars G.: *See*—
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Lindenthal, Hans: *See*—
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Lion Dentifrice Co. Ltd., The: *See*—
Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.

Lipp, Ellis P.: *See*—
Petre, Mark L.; and Lipp, Ellis P., 4,195,208, Cl. 200-63.00R.

Lipschutz, Paul, to Neiman S.A. Apparatus for the electrolytic treatment of metallic parts. 4,194,957, Cl. 204-199.000.

Lisowski, Walter E., to Helm Products, Inc. Boats hardware system. 4,194,459, Cl. 114-221.00R.

List, Helmut: *See*—
Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, 4,194,401, Cl. 73-730.000.

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Littlefield, Herrick B., to Polyproducts Corp. Universal hub for geodesic domes. 4,194,851, Cl. 403-218.000.

Lixenfeld, Manfred: *See*—
Pahl, Arnold; van der Kolk, Hans-Jurgen; and Lixenfeld, Manfred, 4,194,361, Cl. 60-388.000.

Loafman, James R. Bowling aid device. 4,194,736, Cl. 273-54.00B.

Logan, Ralph A.; and Tsang, Won-Tien, to Bell Telephone Laboratories, Incorporated. Method for fabricating junction lasers having lateral current confinement. 4,194,933, Cl. 148-171.000.

Lohmann, Robert P.: *See*—
Brookman, Edward T.; Lohmann, Robert P.; and Markowski, Stanley J., 4,194,359, Cl. 60-39.360.

Lohrbach, Mervin; and Peeples, Richard, to Champion International Corporation. Self-locking container. 4,194,679, Cl. 229-39.00R.

Lombard, Serge; and Borg, Patrick, to ATO Chimie. Measuring adhesive force. 4,194,392, Cl. 73-150.00A.

Lombardi, Claudio; and Belletti, Lorenzo, to Fiat Societa per Azioni. Device for feeding Otto cycle engines with lean combustible mixtures. 4,194,476, Cl. 123-122.00H.

Long, Gary N.: *See*—
Earls, David E.; and Long, Gary N., 4,194,891, Cl. 55-26.000.

Long, William J., to United States Gypsum Company. Polymeric adhesive-coated paper and gypsum wallboard prepared therewith. 4,195,109, Cl. 428-198.000.

Lord Corporation: *See*—
Damico, Dennis J.; and Martin, Brian, 4,194,940, Cl. 156-331.000.
Hannibal, Alan J., 4,194,372, Cl. 64-11.00R.
Sexsmith, Frederick H.; and Hornaman, E. Chris, 4,195,140, Cl. 525-523.000.

Lorenz, Karl: *See*—
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Lovgren, Anders, to Alfred Lovgrens Byggnads Ab. Upwardly openable door. 4,194,549, Cl. 160-84.00R.

Lowery, Louie R., to Keyes Fibre Company. Automatic packing. 4,194,781, Cl. 294-61.000.

Lowrey, R. Dean: *See*—
Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, 4,194,911, Cl. 430-357.000.

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Lubieniecki, Eugene, to North American Car Association. Loading and unloading valves. 4,194,523, Cl. 137-238.000.

Lubrizol Corporation, The: *See*—
Coleman, Lester E., 4,194,985, Cl. 252-51.50A.
Ripple, David E., 4,194,886, Cl. 44-70.000.

Lucas Industries Limited: *See*—
Cranmore, John W., 4,194,850, Cl. 403-140.000.

Lucas, James H.; and Berg, David A., to Allis-Chalmers Corporation. Adjustable lift link for a three-point hitch. 4,194,757, Cl. 280-461.00A.

Lucas, John M.; and Gracovetsky, Serge. Sensor contact. 4,194,840, Cl. 356-429.000.

Lucas, Richard L.; and Allen, John J., to Midland-Ross Corporation. Air pressure regulator. 4,194,522, Cl. 137-116.500.

Luch, Daniel, to International Nickel Company, Inc., The. Process for electroplating directly plateable plastic with nickel-iron alloy strike and article thereof. 4,195,117, Cl. 428-626.000.

Lykes Pasco Packing Co. Dispenser Manufacturing Div.: *See*—
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Lynch, Deane A. L.: *See*—
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Lynes, Inc.: *See*—
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Lytton, Donald B., to Lake Chemical Co. Formulations and process for effecting stoppage of leaks of liquid from tanks, pipes and the like. 4,195,001, Cl. 260-28.00R.

M & T Chemicals Inc.: *See*—
Gajewski, Vincent J.; and Eisenbach, Elliot, 4,195,150, Cl. 528-52.000.

Mabuchi Motor Co., Ltd.: *See*—
Mabuchi, Takaichi, 4,195,242, Cl. 310-239.000.

Mabuchi, Takaichi, to Mabuchi Motor Co., Ltd. Brush device. 4,195,242, Cl. 310-239.000.

Macemon, Herbert J., to Kuhlman Corporation. Connector. 4,194,806, Cl. 339-263.00R.

Mack, Thomas A., to Kaiser Aluminum & Chemical Corporation. Can testing device. 4,194,388, Cl. 73-37.000.

Mackie, Gordon J.: *See*—
Marsh, Robert A.; Mackie, Gordon J.; and Hale, Peter, 4,195,077, Cl. 424-70.000.

MacMillan, Donald W.: *See*—
Hudson, Thomas J.; Huni, Jean-Paul R.; Potocnik, Vinko; and MacMillan, Donald W., 4,194,959, Cl. 204-243.00R.

MacMunn, George D.; and Kavieff, Shelden M., to Jervis B. Webb Company. Buffer apparatus for article processing systems. 4,195,347, Cl. 364-478.000.

Madsen, Rud F., to Aktieselskabet de Danske Sukkerfabrikker. Cooler for mixtures of crystals and crystallizing liquid in the production of sugar and related products. 4,194,557, Cl. 165-94.000.

Maeda, Takeo: *See*—
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.

Maeda, Tatsuo, to Toyo Kogyo Co., Ltd. Locking means for automobile doors. 4,194,377, Cl. 70-360.000.

Maeda, Yo: *See*—
Inoue, Mitsuhiro; and Maeda, Yo, 4,194,738, Cl. 273-73.00C.

Maehara, Toshifumi, to Akebono Brake Industry Co. Ltd. Deceleration sensing type proportioning valve. 4,194,792, Cl. 303-24.00F.

Maes, Robert L. M. E.: *See*—
Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., 4,195,253, Cl. 316-1.000.

Maestri, Giordano B. Pneumatic stapler. 4,194,665, Cl. 227-112.000.

Mager, George E.: *See*—
Tu, George K.; Mager, George E.; Baker, Lamar T.; and Markle, Robert E., 4,195,352, Cl. 364-900.000.

Magil, Paul; and Word, William F., III, to Paul Alan Magil & Associates. Electrical receptacle for use in alarm system. 4,195,290, Cl. 340-568.000.

Magner, Richard W. Two-cycle internal combustion engine having boost port. 4,194,470, Cl. 123-73.00A.

Magnex Corporation: *See*—
Lee, Fred S., 4,195,323, Cl. 360-113.000.

Mahler, James A.: *See*—
Gryl, Frank J., Jr.; and Mahler, James A., 4,195,201, Cl. 178-46.000.

Makiguchi, Sadao: *See*—
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.

Mal, M. Kumar; and Tarkan, Stuart E., to Chromalloy American Corporation. Sintered P/M products containing pre-alloyed titanium carbide additives. 4,194,910, Cl. 75-236.000.

Maleev, Vladimir V.: *See*—
Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,195,236, Cl. 307-252.00K.

Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K. Filtering material and process for producing same. 4,194,945, Cl. 162-135.000.

Malina, Ludek: *See*—
Fritschi, Bruno; Malina, Ludek; and Oestreicher, Max, 4,194,866, Cl. 414-459.000.

Malki, Khaldoun W.: *See*—
Martin, James R.; and Malki, Khaldoun W., 4,195,062, Cl. 422-168.000.

Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Method of and furnace for burning waste material. 4,194,455, Cl. 110-251.000.

Malloy, John F., to Norton Company. Polyurethane adhesive composition and use thereof. 4,194,618, Cl. 206-205.000.

Maly, George P., to Union Oil Company of California. Method of increasing the permeability of subterranean reservoirs. 4,194,566, Cl. 166-307.000.

Mamonov, Nikolai D.: *See*—
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.

Manabe, Shigeru; and Hirakushi, Shuzo, to Koyo Seiko Company Limited. Steering column support assembly. 4,194,411, Cl. 74-492.000.

Maniscalco, Joseph P.: *See*—
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,070, Cl. 423-498.000.
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,071, Cl. 423-498.000.

Manitowoc Company, Inc., The: *See*—
Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., 4,194,638, Cl. 212-46.00R.

Mannesmann Aktiengesellschaft: *See*—
Schrewe, Hans, 4,194,555, Cl. 164-438.000.

Marais, Lionel R., to Compagnie Francaise des Petroles. Method and apparatus for balancing pressures in an oil well. 4,194,567, Cl. 166-311.000.

Marcade, Roque D., to Whirlpool Corporation. Selection acknowledgement system for a laundry appliance. 4,195,232, Cl. 307-130.000.

Marchetti, Charles R., to GTE Sylvania Incorporated. Noise detection circuit. 4,195,264, Cl. 328-134.000.

Marchisio, Giovanni, to Giovanni Marchisio & C. S.r.l. Apparatus for adjusting the thread feed rate of a circular knitting machine. 4,194,375, Cl. 66-132.00T.

Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased (by Woolf, Helga, executrix), to Allied Chemical Corporation. Fluorinated polyalkylene polyamides as stain repellents. 4,195,105, Cl. 427-386.000.

Margalit, Nehemiah; and Krouse, Philip E., to ESB Technology Company. Additive for high drain rate lithium cells. 4,195,122, Cl. 429-194.000.

Margolin, Jed. Random dot generator for raster scan video displays. 4,195,293, Cl. 340-732.000.

Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., to Northwestern University. Wave guide for surface wave transmission of laser radiation. 4,194,808, Cl. 350-96.320.

Mark, Victor, to General Electric Company. Polycarbonate compositions having improved barrier properties. 4,195,157, Cl. 528-174.000.

Mark, Werner J.: *See*—
Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., 4,194,667, Cl. 228-4.100.

Markiewitz, Kenneth H.; and Restaino, Alfred J., to ICI Americas Inc. Esters of carboxy amino phenyl isocyanurates and vinylidene carbonyl oxy alkanols. 4,195,146, Cl. 526-261.000.

Markle, Robert E.: *See*—
Tu, George K.; Mager, George E.; Baker, Lamar T.; and Markle, Robert E., 4,195,352, Cl. 364-900.000.

Markowski, Stanley J.: *See*—
Brookman, Edward T.; Lohmann, Robert P.; and Markowski, Stanley J., 4,194,359, Cl. 60-39.360.

Markus, Harold; and McCaughey, Joseph M., to United States of America, Army. Active armor. 4,194,431, Cl. 89-36.00A.

Marsh, Brian: *See*—
Wright, Donald C.; Marsh, Brian; and Wiechers, Willem, 4,194,898, Cl. 65-114.000.

Marsh, Robert A.; Mackie, Gordon J.; and Hale, Peter, to Procter & Gamble Company, The. Detergent compositions comprising modified proteins. 4,195,077, Cl. 424-70.000.

Martelli, Guglielmo. Device for picking up semi-rigid sheet-like elements from a magazine and transferring them onto a conveyor. 4,194,442, Cl. 93-53.0SD.

Martin, Brian: *See*—
Damico, Dennis J.; and Martin, Brian, 4,194,940, Cl. 156-331.000.

Martin, Ernest N.; and Keirns, Michael L., to Societe d'Assistance Technique pour Produits Nestle S.A. Dispensing and mixing means for water and dehydrated coffee. 4,194,651, Cl. 222-108.000.

Martin, Ernest N. Mixer. 4,194,843, Cl. 366-138.000.

Martin, James R.; and Malki, Khaldoun W., to Combustion Engineering, Inc. Flue gas scrubbing. 4,195,062, Cl. 422-168.000.

Martin, Kenneth R.; and Drown, Clifford F., to Drown, Clifford F. Life vest safety harness. 4,194,257, Cl. 9-342.000.

Martin, Michael G.; Carver, Ronald M.; and Cafer, James E. Retractable fish stringer. 4,194,315, Cl. 43-55.000.

Martuch, Leon L., to JFL Development Company. Method of making a fishing line indicator. 4,194,936, Cl. 156-67.000.

Marx, Thomas O., to Atwood Vacuum Machine Company. Gas spring and method of filling the same. 4,194,731, Cl. 267-65.00R.

Masaki, Masaru; and Yotsutani, Akio, to Nippon Electric Co., Ltd. Selective call radio communication receiver. 4,195,263, Cl. 455-343.000.

Masegian, Gregory. Chainmate. 4,194,724, Cl. 254-88.000.

Mathis, James C.: *See*—
McCoy, Roy G.; and Mathis, James C., 4,195,287, Cl. 340-521.000.

Matsumoto, Chiaki; Imai, Hirokatsu; and Okawa, Masaru, to Foseco Trading AG. Molten metal handling vessels. 4,194,730, Cl. 266-275.000.

Matsumoto, Hajime: *See*—
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.

Matsumoto, Junichiro: *See*—
Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, 4,194,417, Cl. 74-866.000.

Matsushima, Massaki: *See*—
Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, 4,194,812, Cl. 350-357.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Iwaoka, Kazuo; Toh, Tagao; and Fukada, Minoru, 4,195,063, Cl. 422-180.000.
Takagi, Hiromitsu; Kano, Gota; and Teramoto, Iwao, 4,194,927, Cl. 148-1.500.

Matsuura, Norio. Device for retaining scaffold member. 4,194,849, Cl. 403-49.000.

Matsuyama, Kiyoshi: *See*—
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-137.000.

Matsuzaki, Yoshiaki, to Nihon Radiator Co., Ltd. Oil cooler and method for forming it. 4,194,560, Cl. 165-141.000.

Matteson, Lawrence J.; and Shonts, David J., to Eastman Kodak Company. Electronic flash unit for fill-flash photography. 4,194,818, Cl. 354-33.000.

Matthies, Bruce J.: *See*—
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,194,852, Cl. 403-299.000.

Matulich, Dan S.; and Saylor, B. Franklin, to Garrett Corporation, The. Auto ignition temperature control system. 4,194,357, Cl. 60-39.020.

Mauldin, Herbert N. Paver attachment. 4,194,854, Cl. 404-110.000.

Mavko, Edward M.: *See*—
Finke, Theodore R.; and Mavko, Edward M., 4,194,683, Cl. 232-15.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Robbins, David J.; and Bimberg, Dieter H., 4,195,226, Cl. 250-363.00R.

Mayer, Frank: *See*—
Mayerovitch, Myron D., 4,194,498, Cl. 126-450.000.

Mayerovitch, Myron D., to Mayer, Frank. Solar collector cell and roof flashing assembly and method of constructing a roof with such an assembly. 4,194,498, Cl. 126-450.000.

Mazzilli, Nick. Thermo wrist watch. 4,194,356, Cl. 368-11.000.

McCalmont, Arnold M., to Technical Communications Corporation. Voice privacy system with amplitude masking. 4,195,202, Cl. 179-1.50S.

McCandless, James A.: *See*—
Fischer, David J.; McCandless, James A.; and Hager, James D., 4,194,814, Cl. 351-160.00R.

McCaughey, Joseph M.: *See*—
Markus, Harold; and McCaughey, Joseph M., 4,194,431, Cl. 89-36.00A.

McChesney, Richard M.; and Turner, Robert K., to Outboard Marine Corporation. Automatic fuel priming system. 4,194,483, Cl. 123-187.50R.

McClinton, John L.: *See*—
Russell, Alexander H.; and McClinton, John L., 4,195,010, Cl. 260-40.00R.

McCloud, James R.: *See*—
Aslan, Wilfred A.; Guaglione, Giovanni P.; McCloud, James R.; and Meier, Henry G., 4,195,211, Cl. 200-153.00D.

McCombs, Norman R.; and Vrana, Edward E., to Greene & Kellogg, Inc. Pressure swing adsorption process and system for gas separation. 4,194,890, Cl. 55-18.000.

McCoy, Roy G.; and Mathis, James C. Fire and absence detection and alarm system for bed occupants. 4,195,287, Cl. 340-521.000.

McCracken, Donald G., to Aeroquip Corporation. Rotary joint. 4,194,767, Cl. 285-134.000.

McCulloch Corporation: *See*—
Jackson, Robert V., 4,194,482, Cl. 123-148.0CC.

McDaniel, Jerome D.: *See*—
Betteken, Joseph C.; and McDaniel, Jerome D., 4,195,064, Cl. 422-191.000.

McDougal, Thomas L. Controlled clearance seal. 4,194,745, Cl. 277-27.000.

McFarlin, Bill E. Keyboard musical instrument. 4,194,428, Cl. 84-236.000.

McIntyre, Newman, to McIntyre Packaging Company. Apparatus for packaging shoelaces: especially of the round type. 4,194,340, Cl. 53-119.000.

McIntyre Packaging Company: *See*—
McIntyre, Newman, 4,194,340, Cl. 53-119.000.

McMillan, Moses W.: *See*—
Archer, Robert A.; and McMillan, Moses W., 4,195,024, Cl. 260-345.300.

Mead Corporation, The: *See*—
Gudorf, James L., 4,195,304, Cl. 346-75.000.

Mead, John F., to Plessy Handel und Investments A.G. Coupling of optic-waveguide elements. 4,195,045, Cl. 264-1.000.

Medical Plastics Laboratory, Inc.: *See*—
Heller, Robert D., 4,194,303, Cl. 35-17.000.

Meerholz, Edgar F.: *See*—
Hoy, John; Emby, Gordon N.; and Meerholz, Edgar F., 4,195,083, Cl. 424-200.000.

Meier, Henry G.: *See*—
Aslan, Wilfred A.; Guaglione, Giovanni P.; McCloud, James R.; and Meier, Henry G., 4,195,211, Cl. 200-153.00D.

Melander, Clarence, to East Wind Industries, Inc. Wearable ventilation system. 4,194,247, Cl. 2-2.000.

Melbye, Hartvig E.: *See*—
Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., 4,195,318, Cl. 360-39.000.

Melocik, Grant C.: *See*—
Gurwicz, David; and Melocik, Grant C., 4,195,254, Cl. 318-334.000.

Menke, Joseph T., to United States of America, Army. Technique for passivating stainless steel. 4,194,929, Cl. 148-6.15R.

Merck & Co., Inc.: *See*—
Atkinson, Joseph G.; Beianger, Patrice C.; Remy, David C.; and Rooney, Clarence S., 4,195,091, Cl. 424-267.000.
Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, 4,195,023, Cl. 548-209.000.
O'Rourke, Edward C.; and Fullerton, W. Wardle, 4,194,424, Cl. 83-870.000.
Stone, Clement A., 4,195,085, Cl. 424-248.510.

Mertwoy, Helen E.; and Gisser, Henry, to United States of America, Army. Copolymers of alpha-n-alkylstyrenes and styrene. 4,195,144, Cl. 526-173.000.

Meslener, George J., to GTE Laboratories Incorporated. Unipolar to bipolar converter. 4,195,237, Cl. 307-261.000.

Messenger, Joseph U., to Mobil Oil Corporation. Drilling technique. 4,194,580, Cl. 175-61.000.

Messing, Manfred, to Kronwitter, Lotte, nee Staiber. Windsurfer with auxiliary propulsion equipment. 4,194,458, Cl. 114-39.000.

Messrs. Leonhard Kurz: *See*—
Spatle, Wilfried, 4,194,944, Cl. 156-540.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Wanner, Dieter, 4,194,889, Cl. 55-7.000.

Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. 1,3,4-Thiadiazole compounds and herbicidal compositions. 4,195,181, Cl. 544-316.000.

Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, to Bayer Aktiengesellschaft. Activated anionic polymerization of lactams with liquid isocyanatoallophanate activator. 4,195,163, Cl. 528-315.000.

Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, to Bayer Aktiengesellschaft. Transparent polyamides. 4,195,164, Cl. 528-339.000.

Meylan, Serge: *See*—
Thomi, Michel; Groothuis, Michel; and Meylan, Serge, 4,194,353, Cl. 368-38.000.

Midland-Ross Corporation: *See*—
Lucas, Richard L.; and Allen, John J., 4,194,522, Cl. 137-116.500.

Mignonac, Sylviane S. J., nee Mondon: *See*—
Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., 4,195,093, Cl. 424-275.000.

Mikhailov, Alexei P.: *See*—
Mukhin, Zhores G.; Vlasov, Vladimir N.; and Mikhailov, Alexei P., 4,194,611, Cl. 193-2.00B.

Mikulesky, Penny R.: *See*—
Mikulesky, Thomas L., 4,194,693, Cl. 239-390.000.

Mikulesky, Thomas L., to Mikulesky, Penny R. Lawn sprinkler. 4,194,693, Cl. 239-390.000.

Miller, Donald L., to Facet Enterprises, Inc. Wear compensated electromagnetic clutch device. 4,194,610, Cl. 192-111.00A.

Miller, J. Blaine, to Gulf Oil Corporation. Method of forming a rubblized in-situ retort. 4,194,788, Cl. 299-2.000.

Miller, Kenneth G., to Respiratory Care, Inc. Humidifier-nebulizer. 4,195,044, Cl. 261-142.000.

Miller, Paul H.; and Schafer, Tillman H. Automatic echo detection and classification system. 4,195,359, Cl. 367-94.000.

Miller, Roy W., to Pullman Incorporated. Railway hopper car door operating mechanism. 4,194,450, Cl. 105-253.000.

Miller, William V., to Shell Oil Company. Method and device for controlling insects on livestock. 4,195,075, Cl. 424-14.000.

Milliken Research Corporation: *See*—
Deal, James F., III, 4,194,993, Cl. 252-541.000.
Reynolds, James R., 4,194,540, Cl. 139-291.00R.

Mills Products, Inc.: *See*—
Katona, Joseph W., 4,194,334, Cl. 52-397.000.

Milo, Joseph V., to Universal Valve Co., Inc. Restrictive vent. 4,194,530, Cl. 137-587.000.

Mimoun, Hubert; and Charpentier, Robert, to Institut Francais du Petrole. Heterogeneous phase oxidation of olefins to ketones. 4,195,039, Cl. 260-597.00R.

Mims, Herman D. Cookie capper apparatus. 4,194,443, Cl. 99-450.400.

Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, to Licentia Patent-Verwaltungs-G.m.b.H. Tuning circuit for high frequency receiving apparatus with residual sideband modulation, especially for television receivers. 4,195,314, Cl. 455-185.000.

Minnesota Mining and Manufacturing Company: *See*—
Bleeker, Lyle A.; and Owen, Richard, 4,194,827, Cl. 355-1.000.
Byram, David C.; and Nowicki, John V., Jr., 4,194,636, Cl. 211-71.000.
Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, 4,194,911, Cl. 430-357.000.

Minoura, Mikio: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.

Misner, Robert E.: *See*—
Gerber, Samuel M.; and Misner, Robert E., 4,195,012, Cl. 260-42.210.

Mitchell, Howard E., to Dresser Industries, Inc. Raise boring head with retractable gage cutters. 4,194,578, Cl. 175-53.000.

Mitchell, Kenneth B.: *See*—
Benjamin, Robert F.; and Mitchell, Kenneth B., 4,194,813, Cl. 350-363.000.

Mitchhart, Ray M.; and Zingl, Hans, to Cooper Industries, Inc. Drill pipe handling mechanism. 4,194,419, Cl. 81-57.330.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Ishii, Toshiaki; and Watanabe, Eiki, 4,194,594, Cl. 187-29.00R.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Uto, Yoshimitsu; Omae, Takashi; Fukaya, Yasuhiro; and Yoshida, Yasuyuki, 4,194,672, Cl. 228-194.000.
Yamauchi, Noriyuki; Toko, Yoshiaki; and Ehara, Takao, 4,194,864, Cl. 414-283.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.
Miyakawa, Seiichi: *See*—
Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, 4,194,830, Cl. 355-3.0DD.
Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,195,260, Cl. 324-204.000.
Miyamoto, Kazuaki: *See*—
Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.
Miyamoto, Yoshinobu: *See*—
Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, 4,195,246, Cl. 313-292.000.
Miyazawa, Hideo, to Stanley Electric Co., Ltd. Sealed beam lamp for automobile. 4,195,245, Cl. 313-113.000.
Mizokami, Hiroshi: *See*—
Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.
Mizzi Joseph M. Sugar cane harvesters. 4,194,344, Cl. 56-13.900.
Mlyniec, Kenneth P., to Emerson Electric Co. Pressure responsive electrical switch and means of contact gap setting therefor. 4,195,209, Cl. 200-83.00R.
Mobil Oil Corporation: *See*—
Audeh, Costandi A., 4,194,885, Cl. 44-63.000.
Billings, Ronald P.; and Hysell, Ellen M., 4,194,965, Cl. 208-113.000.
Braid, Milton, 4,194,980, Cl. 252-45.000.
Brown, George L.; and Spencer, Arthur T., 4,195,005, Cl. 260-29.6TA.
Brown, George L.; and Spencer, Arthur T., 4,195,006, Cl. 260-29.6TA.
Chen, Nai Y.; and Wang, Ikai, 4,194,964, Cl. 208-108.000.
Chung, Harold S.; Johnson, George C.; and Huang, Tracy J., 4,194,969, Cl. 209-5.000.
Messenger, Joseph U., 4,194,580, Cl. 175-61.000.
Mohasco Corporation: *See*—
Cycowicz, Izchak; and Frimmet, Alfred, 4,194,783, Cl. 297-88.000.
Moisson, Marc F. L.: *See*—
Sovish, Richard C.; and Moisson, Marc F. L., 4,194,750, Cl. 277-208.000.
Molins Machine Company, Inc.: *See*—
Coburn, Robert E., 4,194,662, Cl. 226-110.000.
Moller, Heinrich; and Hoffmann, Karl-Heinz, to Braun Aktiengesellschaft. Hair dryer. 4,195,217, Cl. 219-370.000.
Moller, Heinz; and Hess, Joachim, to Robert Bosch GmbH. Contactless control pulse generator for rotary machine timing. 4,195,241, Cl. 310-168.000.
Monsanto Company: *See*—
Anderson, George J.; Santer, J. Owen; and Desmond, Timothy F., 4,195,116, Cl. 428-524.000.
Betteken, Joseph C.; and McDaniel, Jerome D., 4,195,064, Cl. 422-191.000.
Bleikamp, Roy H., Jr., 4,194,960, Cl. 204-280.000.
Perry, Glen D., 4,194,939, Cl. 156-254.000.
Monte, Anthony J. Fire suppression mechanism for military vehicles. 4,194,571, Cl. 169-61.000.
Montedison S.p.A.: *See*—
Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, 4,195,036, Cl. 260-561.0HL.
Montgomery, Robert H., Jr.; and Oaks, Seibert S., to Kennametal Inc. Grooved earthworking bit and method of enhancing the life thereof. 4,194,791, Cl. 299-86.000.
Moon, Ronald L., to Varian Associates, Inc. Lattice constant grading in the $Al_yGa_{1-y}As_{1-x}Sb_x$. 4,195,305, Cl. 357-16.000.
Moore, Frank D.: *See*—
Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., 4,195,043, Cl. 261-94.000.
Moore, James K., to CBS Inc. Method and apparatus for eliminating deadband in digital recursive filters. 4,195,350, Cl. 364-724.000.
Moran, Steven E., to United States of America, Navy. Scanning focused local oscillator optical heterodyne imaging system. 4,195,221, Cl. 455-609.000.
Moran, Steven E., to United States of America, Navy. Coherence length gated optical imaging system. 4,195,311, Cl. 358-95.000.
Moretti, Walter: *See*—
Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.
Morgan, Gerard J., III: *See*—
Hurd, Donald J.; and Morgan, Gerard J., III, 4,194,772, Cl. 292-256.650.
Morgan, Jerome. Cigarette holder. 4,194,516, Cl. 131-174.000.
Mori, Yasuki: *See*—
Tomioka, Shinji; and Mori, Yasuki, 4,195,171, Cl. 536-17.00R.
Morishita, Tomohiro: *See*—
Sakemi, Hiroji; Morishita, Tomohiro; Numata, Hideji; and Ono, Takuro, 4,194,917, Cl. 106-62.000.
Moriya, Yoshiro; Ikai, Kazuhito; and Tanaka, Makoto, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry; and Ibigawa Electric Industry Ltd. Heat-resisting ceramic fibers and method for manufacture thereof. 4,194,914, Cl. 106-18.140.
Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., to Manitowoc Company, Inc., The. Ring supported tower crane. 4,194,638, Cl. 212-46.00R.
Morse, Robert L., to Tecumseh Products Company. Accumulator for refrigeration system. 4,194,370, Cl. 62-503.000.
Morse, Robert L., to Tecumseh Products Company. Refrigeration system with compressor mounted accumulator. 4,194,371, Cl. 62-503.000.
Morton, Douglas R., Jr., to Upjohn Company, The. Methylenecyclopentane derivatives. 4,195,178, Cl. 542-426.000.
Morton, Henry H. Alarm system. 4,195,288, Cl. 340-539.000.
Motion Reflector Industries, Inc.: *See*—
Campagna, James V., Jr., 4,194,809, Cl. 350-97.000.
Motorola, Inc.: *See*—
Conner, Leo B., Jr., 4,195,297, Cl. 343-12.00R.
Conroy, Peter J., 4,195,301, Cl. 343-700.0MS.
Schoeff, John A., 4,195.235, Cl. 307-229.000.
Zarkov, Sviataslov, 4,195,268, Cl. 331-116.00R.
Motosugi, Katsuhiko: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.
Muenchinger, Herman G., to Research Engineering & Manufacturing, Inc. Thread-forming screw with step taper. 4,194,430, Cl. 85-46.000.
Muhsil, Wilfried: *See*—
Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.
Mukhin, Zhores G.; Vlasov, Vladimir N.; and Mikhailov, Alexei P., to Institut Gornogo Dela Sibirskogo Otdelenia Nauk SSSR. Vibrator for importing vibration to a working platform. 4,194,611, Cl. 193-2.00B.
Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, to Merck & Co., Inc. 2-(2-Furoyl)1,2-benzisothiazole-3-one, 2-(2-furoyl) saccharin, and 2-(2-thenoyl) saccharin. 4,195,023, Cl. 548-209.000.
Murakami, David; and Sommer, Donald J., to Boeing Company, The. Switching power supply having a wide range input capability. 4,195,335, Cl. 363-49.000.
Murakami, Hiroyashu: *See*—
Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.
Muraoka, Yasuhiko: *See*—
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Murphy, Peter T.: *See*—
Wells, Robert J.; and Murphy, Peter T., 4,195,179, Cl. 542-444.000.
Murphy, Raymond F., to Exxon Research & Engineering Co. CDB rubber modified thermoplastics. 4,195,133, Cl. 525-71.000.
Murphy, Robert E.: *See*—
Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.
Muskegon Piston Ring Company: *See*—
Nisper, Kenneth J., 4,194,747, Cl. 277-140.000.
Myer, Roth & Pastor Machinenfabrik GmbH: *See*—
Ditges, Gunter, 4,194,541, Cl. 140-147.000.
Myers, Edward T.: *See*—
Doyle, Richard F.; and Myers, Edward T., 4,195,278, Cl. 336-90.000.
Myers, Harold E.; and Sheetz, Charles E., to FMC Corporation. Dry bin filler. 4,194,343, Cl. 53-493.000.
Myers, Michael: *See*—
Kurr, George W.; and Myers, Michael, 4,195,197, Cl. 174-78.000.
N. A. Taylor Co., Inc.: *See*—
Dostal, Gerald A.; and Havlick, Richard S., 4,194,784, Cl. 297-126.000.
N L Industries, Inc.: *See*—
Foerster, George S.; and Stuhler, Harold A., 4,194,904, Cl. 75-78.000.
Perkins, Roderick B., 4,194,915, Cl. 106-38.250.
Nabisco, Inc.: *See*—
Swanson, George G.; Strom, Robert E.; and Jansen, Philip, 4,194,300, Cl. 34-217.000.
Nachtigahl, Carsten, to Nako Enterprises Ltd. Plumbing test fitting. 4,194,721, Cl. 251-148.000.
Nagano, Masashi, to Shimano Industrial Company Limited. Front derailleur for a bicycle provided with a swingingly movable chain guide. 4,194,409, Cl. 74-217.00B.
Nakagawa, Yuji: *See*—
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.
Nakahara, James H.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.
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Nakashima Manufacturing Company, Ltd.: *See*—
Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, 4,194,946, Cl. 162-156.000.

Nakayama, Wataru: *See*—
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,194,384, Cl. 72-325.000.
Nako Enterprises Ltd.: *See*—
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Nalco Chemical Company: *See*—
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,070, Cl. 423-498.000.
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,071, Cl. 423-498.000.
Hurlock, John R.; and Ballweber, Edward G., 4,195,003, Cl. 260-29.4UA.
Rosenberger, Roy R., 4,194,391, Cl. 73-61.400.
Namikawa, Hiroshi: *See*—
Kumata, Ken; and Namikawa, Hiroshi, 4,194,916, Cl. 106-47.00R.
Narvaez, Henry R. Electrical junction access device. 4,194,644, Cl. 220-3.300.
Nat, Willem G.: *See*—
Italiaander, Albertus; Kruk, Arie; Nat, Willem G.; and Rees, Nicolaas M. J., 4,194,434, Cl. 91-20.000.
National Research Development Corporation: *See*—
Richardson, Edward G.; and Williamson, Keith H., 4,195,325, Cl. 361-56.000.
National Steel Corporation: *See*—
Smith, James T., 4,194,330, Cl. 52-177.000.
Natzel, Jerome W., to Truth Incorporated. Adjustable roller mechanism. 4,194,266, Cl. 16-99.000.
NCR Corporation: *See*—
Grey, Michael O., 4,194,847, Cl. 400-320.000.
Smith, Walter A.; and Harp, Raymond T., 4,195,339, Cl. 364-200.000.
Nebell, Hans G. T., to Ardal og Sunndal Verk a. s. Arrangement for compensating for detrimental magnetic influence between two or more rows of transverse electrolytic pots or cells for producing aluminum, by electrolytic reduction. 4,194,958, Cl. 204-243.00M.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Treating psychic disorders with tetrahydropyridin-4-yl-1H-indoles. 4,195,081, Cl. 424-263.000.
Neiman S.A.: *See*—
Lipschutz, Paul, 4,194,957, Cl. 204-199.000.
Neri, Vincenzo. Air and water supply system for dental handpieces. 4,194,289, Cl. 433-101.000.
Ness, Irving S.; and Fechillas, Michael R., to Johnson & Johnson. Disposable diaper inner facing. 4,194,507, Cl. 128-287.000.
Neujens, Georges J.: *See*—
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,194,625, Cl. 206-455.000.
Neuman, Richard F.: *See*—
Garrett, Wayne H.; and Neuman, Richard F., 4,194,596, Cl. 188-72.700.
Newman, Edward S., to Hoffmann-La Roche Inc. Radioimmunoassay of alpha ıfetoprotein. 4,195,073, Cl. 424-1.000.
NGK Spark Plug Co., Ltd.: *See*—
Satow, Haruhiko; Ueda, Tadakazu; and Ogasawara, Ikuo, 4,194,486, Cl. 123-210.000.
Nichols, Robert W.; and Pierce, Stanley L., Jr., to Ford Motor Company. Hydrodynamic torque convertor with double circuit torus flow and lock-up clutch. 4,194,604, Cl. 192-3.300.
Nicholson, Geoffrey C.: *See*—
Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, 4,194,911, Cl. 430-357.000.
Niehaves, Kurt: *See*—
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Nielsen, Donald R.: *See*—
Bierschenk, Thomas R.; Pettit, Rowland; and Nielsen, Donald R., 4,195,190, Cl. 568-860.000.
Nielsen, Floyd P.; and Anderson, Bernard O., to Nielsen Industries, Inc. Cow milking system. 4,194,467, Cl. 119-14.030.
Nielsen Industries, Inc.: *See*—
Nielsen, Floyd P.; and Anderson, Bernard O., 4,194,467, Cl. 119-14.030.
Nihon Radiator Co., Ltd.: *See*—
Matsuzaki, Yoshiaki, 4,194,560, Cl. 165-141.000.
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Nippon Electric Co., Ltd.: *See*—
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Suzuki, Shunichi, 4,195,239, Cl. 307-355.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,195,018, Cl. 260-112.50R.
Nippon Kogaku K.K.: *See*—
Nakano, Yoshiyuki; Sato, Akihiko; and Araki, Yoshitaka, 4,194,820, Cl. 354-43.000.
Nishi, Tadaaki: *See*—
Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.
Nishida, Mitsuo, to Citizen Watch Co., Ltd. Connection structure for watch case and band. 4,194,355, Cl. 368-282.000.
Nishino, Tadashi: *See*—
Kimura, Tomoaki; and Nishino, Tadashi, 4,194,553, Cl. 164-87.000.
Nisper, Kenneth J., to Muskegon Piston Ring Company. Three-piece oil control ring. 4,194,747, Cl. 277-140.000.
Nissan Motor Company, Limited: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.
Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, 4,194,417, Cl. 74-866.000.
Sugasawa, Fukashi, 4,194,416, Cl. 74-859.000.
Usui, Keizaburo; Hayama, Isao; Hamada, Hideo; and Yamamuro, Sigeaki, 4,194,608, Cl. 192-0.092.
Nissan Shatai Co., Ltd.: *See*—
Ohsawa, Eiji; and Yoshikawa, Yoshiro, 4,194,396, Cl. 73-311.000.
Nivert, Jean-Pierre: *See*—
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Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., 4,195,019, Cl. 260-17.200.
Noakes, Jack E.; and Terner, Leslie L., to Ford Motor Company. Method of increasing the strength of a beta silicon carbide article. 4,195,049, Cl. 264-63.000.
Noland, Richard D. Filter bag assembly for baghouses. 4,194,894, Cl. 55-379.000.
Nomura, Yasushi: *See*—
Kume, Kazunari; and Nomura, Yasushi, 4,194,351, Cl. 368-82.000.
Nonnenmacher, Gerhard, to Robert Bosch GmbH. Control system for a hydrostatic drive. 4,194,362, Cl. 60-431.000.
Nonnenmacher, Gerhard: *See*—
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Noranda Mines Limited: *See*—
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Nordson Corporation: *See*—
Harjar, Martin J., 4,194,696, Cl. 239-707.000.
North American Car Association: *See*—
Lubieniecki, Eugene, 4,194,523, Cl. 137-238.000.
Northern Telecom Limited: *See*—
Walling, Jorg-Hein, 4,194,844, Cl. 366-157.000.
Northwestern University: *See*—
Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., 4,194,808, Cl. 350-96.320.
Norton Company: *See*—
Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., 4,195,043, Cl. 261-94.000.
Malloy, John F., 4,194,618, Cl. 206-205.000.
Nottke, James E.; and Ruebel, Jack K., to Lykes Pasco Packing Co. Dispenser Manufacturing Div. Liquid mixing and aerating system. 4,194,650, Cl. 222-57.000.
November, Milton H., to International Telephone and Telegraph Corporation. Densitometer calibration method. 4,194,385, Cl. 73-1.00R.
Nowak, Michael T.; and Rybny, Charles B., to Celanese Corporation. Ultraviolet curable self-pigmented coating composition. 4,194,955, Cl. 204-159.150.
Nowicki, John V., Jr.: *See*—
Byram, David C.; and Nowicki, John V., Jr., 4,194,636, Cl. 211-71.000.
Numata, Hideji: *See*—
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N.V. Raychem S.A.: *See*—
Brusselmans, Jacques H. F., 4,195,106, Cl. 428-35.000.
Sovish, Richard C.; and Moisson, Marc F. L., 4,194,750, Cl. 277-208.000.
Nyman Mfg. Co.: *See*—
Zabner, Adolf; and Bellemore, Norman I., 4,194,645, Cl. 220-306.000.
O.K. Machine and Tool Corporation: *See*—
Kober, Marvin, 4,194,700, Cl. 242-7.170.
Oaks, Seibert S.: *See*—
Montgomery, Robert H., Jr.; and Oaks, Seibert S., 4,194,791, Cl. 299-86.000.
Oblonsky, Jan G.: *See*—
Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.
O'Brien, Daniel J.: *See*—
Tracy, Daniel J.; Palmer, John P.; and O'Brien, Daniel J., 4,194,708, Cl. 244-15.000.
Occidental Oil Shale, Inc.: *See*—
Studebaker, Irving G.; and Hutchins, Ned M., 4,194,789, Cl. 299-2.000.
Ochiai, Shiyuichiro: *See*—
Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.
O'Connell, Timothy R.; and Leach, George S., to Electronic Memories and Magnetics Corporation. Sense line termination circuit for semiconductor memory systems. 4,195,356, Cl. 365-189.000.
Oestreicher, Max: *See*—
Fritschi, Bruno; Malina, Ludek; and Oestreicher, Max, 4,194,866, Cl. 414-459.000.
Offermans, Hubert G., to Thomas Regout N.V. Telescoping guide rail construction. 4,194,793, Cl. 308-3.800.
Ogasawara, Ikuo: *See*—
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Oglander, Allen H.; and Shannon, Richard E. Manually operated label dispensing machine. 4,194,646, Cl. 221-73.000.

Ohashi, Hideaki: *See*—
Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, 4,195,037, Cl. 260-575.000.
Ohhira, Seiichi: *See*—
Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, 4,194,900, Cl. 75-0.50C.
Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, to Mitsubishi Kinzoku Kabushiki Kaisha. Forgeable nickel-base super alloy. 4,194,909, Cl. 75-171.000.
Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, to Ricoh Company, Ltd. Development apparatus. 4,194,830, Cl. 355-3.0DD.
Ohsawa, Eiji; and Yoshikawa, Yoshiro, to Nissan Shatai Co., Ltd. Automobile fuel gauge system. 4,194,396, Cl. 73-311.000.
Ohsawa, Mitsuo; and Kawagoe, Hiroshi, to Sony Corporation. Record player. 4,194,743, Cl. 274-1.00E.
Ohtsuka, Kunio: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.
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Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,195,249, Cl. 313-493.000.
Okada, Takanori: *See*—
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Okamoto, Yoshikazu: *See*—
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Okamura, Yoshinori: *See*—
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Okawa, Masaru: *See*—
Matsumoto, Chiaki; Imai, Hirokatsu; and Okawa, Masaru, 4,194,730, Cl. 266-275.000.
Okerblom, Charles L., to International Telephone and Telegraph Corporation. Butterfly valve having high performance disc. 4,194,722, Cl. 251-305.000.
Okuyama, Toshio: *See*—
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.
Olin Corporation: *See*—
Popplewell, James M.; Acton, Constance F.; and Brock, Andrew J., 4,194,928, Cl. 148-2.000.
Olympus Optical Co., Ltd.: *See*—
Ida, Masatoshi, 4,195,319, Cl. 360-72.100.
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Omae, Takashi: *See*—
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Omark Industries, Inc : *See*—
Scott, Lewis A.; and Gibson, Duane M., 4,194,544, Cl. 144-193.00D.
Ong, John T. H., to Eli Lilly and Company. Taste-stable aqueous pharmaceutical suspension of tall oil sitosterols and a method for the preparation thereof. 4,195,084, Cl. 424-238.000.
Ono Pharmaceutical Co. Ltd.: *See*—
Hayashi, Masaki; Kori, Seiji; and Okada, Takanori, 4,195,182, Cl. 180-53.000.
Ono, Takuro: *See*—
Sakemi, Hiroji; Morishita, Tomohiro; Numata, Hideji; and Ono, Takuro, 4,194,917, Cl. 106-62.000.
Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, to Asahi Glass Company, Ltd.; and Nakashima Manufacturing Company, Ltd. Process for continuously preparing fiber reinforced cement. 4,194,946, Cl. 162-156.000.
Optical Coating Laboratory, Inc.: *See*—
Berman, Herbert L., 4,195,234, Cl. 307-117.000.
Ordway, James F.: *See*—
Bailey, Edward A.; and Ordway, James F., 4,194,579, Cl. 175-57.000.
Organisation Europeenne de Recherches: *See*—
Sanger, Georg; and Franz, Alfred K., 4,195,224, Cl. 250-289.000.
O'Rourke, Edward C.; and Fullerton, W. Wardle, to Merck & Co., Inc. Apparatus for longitudinal slicing of cylindrical body. 4,194,424, Cl. 83-870.000.
Orton, Michael L.: *See*—
Goulding, Terence; and Orton, Michael L., 4,195,139, Cl. 525-441.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Auto shut-off apparatus for cassette tape recorder. 4,194,704, Cl. 242-191.000.
Oscarson, John R.: *See*—
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Ostermayer, Franz: *See*—
Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,195,090, Cl. 424-263.000.
Ostertag, Alfred, to Christensen, Inc. Double acting shock absorbers for drill strings. 4,194,582, Cl. 175-321.000.
Ota, Sakae: *See*—
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Otofuji, Kiyoshi, to Hitachi Denshi Kabushiki Kaisha. Voltage comparator circuit having dead zone. 4,195,240, Cl. 307-362.000.
Otsuka Chemical Co., Ltd.: *See*—
Kobayashi, Masahiro; and Yabuhara, Tadao, 4,195,007, Cl. 260-29.6HN.
Otto, Carl W., to Airco, Inc. Method of preparing bacon slabs for slicing. 4,195,098, Cl. 426-513.000.
Otto, Eberhard; Wehner, Wolfgang; and Wirth, Hermann O., to Ciba-Geigy Corporation. Process for producing organotin compounds. 4,195,029, Cl. 260-429.700.
Otto Fuchs KG: *See*—
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.
Ouhashi, Isamu. Golf ball retriever. 4,194,779, Cl. 294-19.00A.
Outboard Marine Corporation: *See*—
DuBois, Edmund H.; and Sheldon, John D., 4,194,609, Cl. 192-0.096.
McChesney, Richard M.; and Turner, Robert K., 4,194,483, Cl. 123-187.50R.
Stephenson, Donald K., 4,194,485, Cl. 123-198.0DC.
Ovchinnikov, Viktor S.: *See*—
Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor S.; and Safronov, Vladimir E., 4,195,354, Cl. 365-105.000.
Overmars, Marinus: *See*—
Klomp, Franciscus M.; and Overmars, Marinus, 4,194,623, Cl. 206-418.000.
Owen, Richard: *See*—
Bleeker, Lyle A.; and Owen, Richard, 4,194,827, Cl. 355-1.000.
Owens-Corning Fiberglas Corporation: *See*—
Symborski, Alex P.; Fulmer, Ray M.; and Thomas, David W., 4,194,896, Cl. 65-3.00R.
Thompson, Thomas K., 4,194,895, Cl. 65-2.000.
Oxenrider, Bryce C.: *See*—
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased, 4,195,105, Cl. 427-386.000.
Oy Nokia Ab & Valmet Oy: *See*—
Huostila, Markku; and Haapsaari, Timo, 4,194,947, Cl. 162-207.000.
Oyama, Hajime: *See*—
Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, 4,194,830, Cl. 355-3.0DD.
P. R. Mallory & Co. Inc.: *See*—
Rossler, Eleanor J.; and Przybyla, Franciszek J., 4,195,120, Cl. 429-50.000.
Paaren, Herbert E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,195,027, Cl. 260-397.200.
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., to United States of America, Air Force. Perfluorinated polyalkylether based lubricant composition. 4,194,983, Cl. 252-49.900.
Pagnozzi, Ernesto G.: *See*—
Pagnozzi, Vincenzo; and Pagnozzi, Ernesto G., 4,194,296, Cl. 34-16.500.
Pagnozzi, Vincenzo; and Pagnozzi, Ernesto G. Vacuum drying kiln. 4,194,296, Cl. 34-16.500.
Pahl, Arnold; van der Kolk, Hans-Jurgen; and Lixenfeld, Manfred, to Robert Bosch GmbH. Electro-mechanical control system for hydraulic displacement pumps, such as swash plate or eccenter pumps. 4,194,361, Cl. 60-388.000.
Pahl, Arnold; and Nonnenmacher, Gerhard, to Robert Bosch GmbH. Arrangement for controlling the operation of a fluid-displacement machine. 4,194,364, Cl. 60-445.000.
Palmer, Catherine G.: *See*—
Rhine, Samuel A.; Thompson, Joseph F.; and Palmer, Catherine G., 4,194,513, Cl. 128-750.000.
Palmer, John P.: *See*—
Tracy, Daniel J.; Palmer, John P.; and O'Brien, Daniel J., 4,194,708, Cl. 244-15.000.
Palmieri, John P.: *See*—
Palmieri, Vincent A.; and Palmieri, John P., 4,194,287, Cl. 30-276.000.
Palmieri, Vincent A.; and Palmieri, John P. Nylon line vegetation cutter feed. 4,194,287, Cl. 30-276.000.
Palovaara, Jaakko, to Valmet 04. Rolls, such as filled calender rolls, having deflection compensation. 4,194,446, Cl. 100-162.00B.
Panepinto, William, Jr.: *See*—
Joyce, Thomas F.; and Panepinto, William, Jr., 4,195,341, Cl. 364-200.000.
Panoch, Hans-Joachim: *See*—
Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,195,162, Cl. 528-313.000.
Papa, Anthony J.: *See*—
Dunleavy, Raymond A.; and Papa, Anthony J., 4,195,151, Cl. 528-163.000.
Papas, Gary R. Environmentally controlled unit. 4,195,131, Cl. 435-291.000.
Pappageorge, George: *See*—
Deerwester, Donald A., 4,194,268, Cl. 17-52.000.
Park-Ohio Industries, Inc.: *See*—
Chiboroski, Joseph W., 4,195,213, Cl. 219-10.690.
Parkes, John: *See*—
Hampshire, Michael J.; Poole, Norman J.; and Parkes, John, 4,195,284, Cl. 340-384.00E.
Parkinson, Truman D., to Tutco, Inc. Heated wiper arrangement. 4,194,261, Cl. 15-250.070.
Parks-Cramer Company: *See*—
Lane, John E., 4,194,349, Cl. 57-265.000.
Parr, Erwin W. Valve. 4,194,589, Cl. 180-271.000.

Parsons, Ronald, to Spencer Wright Industries, Inc. Tufting machine needles. 4,194,457, Cl. 112-222.000.

Pascual, Rafael: *See—*
Cox, Allen R.; Pascual, Rafael; and Rigbey, Leonard J., 4,195,322, Cl. 360-103.000.

Pase, Michael G. Two man volleyball. 4,194,740, Cl. 273-411.000.

Patel, Gordhanbhai N., to Allied Chemical Corporation. Vapor-phase moving-boundary indicator. 4,195,055, Cl. 422-56.000.

Patel, Gordhanbhai N., to Allied Chemical Corporation. Vapor permeation time-temperature indicator. 4,195,056, Cl. 422-56.000.

Patel, Gordhanbhai N., to Allied Chemical Corporation. Vapor-phase moving-boundary indicator. 4,195,057, Cl. 422-56.000.

Patel, Gordhanbhai N., to Allied Chemical Corporation. Vapor permeation time-temperature indicator. 4,195,058, Cl. 422-56.000.

Paterson, Malcolm M.; Paxson, William J.; and Christensen, Charles W., to Raytheon Company. Adjustable conveyor. 4,194,633, Cl. 209-152.000.

Paton, W. Donald; and Steenson, Thomas W., to Butler Manufacturing Company. Attachment for mounting concrete wall panels on a building. 4,194,333, Cl. 52-235.000.

Pattee, Harry E.: *See—*
United States of America, National Aeronautics and Space Administration; Lemcoe, Meyer M.; and Pattee, Harry E., 4,195,279, Cl. 338-2.000.

Patterson, Ronald: *See—*
Grabbe, Dimitry; and Patterson, Ronald, 4,195,193, Cl. 174-52.0FP.

Paul Alan Magil & Associates: *See—*
Magil, Paul; and Word, William F., III, 4,195,290, Cl. 340-568.000.

Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, to Bayer Aktiengesellschaft. Process for preparing pseudo-disaccharides. 4,195,173, Cl. 536-17.00R.

Pawlak, Jan: *See—*
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Paxson, William J.: *See—*
Paterson, Malcolm M.; Paxson, William J.; and Christensen, Charles W., 4,194,633, Cl. 209-152.000.

Payne, Ellis P., to Armstrong Cork Company. Sample display device. 4,194,307, Cl. 35-49.000.

Pearson, Kenneth. Container with built in straw. 4,194,674, Cl. 229-7.00S.

Pechacek, Ctirad; and Sehnal, Richard, to Ustav pro vyzkum motorovych vozidel. Circuit arrangement for the regulation of the transmission stages on an automatic gear changer. 4,194,418, Cl. 74-866.000.

Peeples, Richard: *See—*
Lohrbach, Mervin; and Peeples, Richard, 4,194,679, Cl. 229-39.00R.

Peirson, John R.; and Lynch, Deane A. L., to J. R. Pierson Building Systems Limited. Building construction. 4,194,328, Cl. 52-86.000.

Peniston, Quintin P.; and Johnson, Edwin L. Process for the manufacture of chitosan. 4,195,175, Cl. 536-20.000.

Pennerstorfer, Walter. Overflow valve. 4,194,251, Cl. 4-199.000.

Perahia, Avraham: *See—*
Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., 4,195,318, Cl. 360-39.000.

Pereskokova, Ida I.: *See—*
Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., 4,195,019, Cl. 260-17.200.

Perkins, Roderick B., to N L Industries, Inc. Foundry mold and core wash additives. 4,194,915, Cl. 106-38.250.

Perry, Elijah R.; and Rabinowitz, Mario, to Electric Power Research Institute, Inc. High-voltage DC transmission system and method. 4,195,334, Cl. 363-44.000.

Perry, Glen D., to Monsanto Company. Method of making layered fabrics. 4,194,939, Cl. 156-254.000.

Peter, Heinz: *See—*
Pfeifer, Josef; and Peter, Heinz, 4,195,165, Cl. 528-346.000.

Peters, Charles L., Jr., to Box Innards, Inc. Partition interlock construction. 4,194,675, Cl. 229-15.000.

Peters, Clifford M.: *See—*
Hargraves, Melvin J.; and Peters, Clifford M., 4,194,529, Cl. 137-557.000.

Peters, Ronald L., to FMC Corporation. Method and apparatus for shaking trees grown in rows. 4,194,347, Cl. 56-328.0TS.

Peterson, Gordon E., to Union Carbide Corporation. Thin flexible electrodes and the method for producing them. 4,195,121, Cl. 429-127.000.

Peterson, John I., to United States of America, America. Dye-containing polymer composition. 4,194,877, Cl. 8-4.000.

Petre, Mark L.; and Lipp, Ellis P., to Emhart Industries, Inc. Single pole double throw snap switch. 4,195,208, Cl. 200-63.00R.

Petrimaux, Eric: *See—*
Bouteille, Daniel; Thomasse, Andre; and Petrimaux, Eric, 4,194,533, Cl. 137-624.180.

Petro, John D., to Commerical Shearing, Inc. Two speed valves and bi-directional motor system. 4,194,366, Cl. 60-483.000.

Pettit, Rowland: *See—*
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Petukhov, Vadim D.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.

Pfahl, Robert C., Jr., to Western Electric Company, Incorporated. Method and apparatus for generating a controllably exposed vapor body for heating articles. 4,194,297, Cl. 34-26.000.

Pfalzer, Lothar; and Fischer, Siegbert, to J. M. Voith GmbH. Method and apparatus for separating magnetic particles from waste paper. 4,194,968, Cl. 209-3.000.

Pfeifer, Josef; and Peter, Heinz, to Ciba-Geigy Corporation. Aliphatic polyamide from disubstituted decane diamine. 4,195,165, Cl. 528-346.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.

Phastek: *See—*
Anello, John L., 4,195,310, Cl. 358-81.000.

Phibbs, Murray K.; and Sipos, Peter A., to Du Pont of Canada Limited. Process for the manufacture of N-(substituted)-3-aminoacrylonitriles. 4,195,034, Cl. 260-465.00E.

Phillips Petroleum Company: *See—*
Drake, Charles A.; and Williams, Ralph P., 4,195,155, Cl. 528-121.000.
Zuech, Ernest A., 4,195,042, Cl. 260-604.0HF.

Phy, Charles L.: *See—*
Williams, Donald F.; and Phy, Charles L., 4,194,441, Cl. 93-51.0HW.

Pickard, George L.: *See—*
West, George A.; Arends, Albert W.; and Pickard, George L., 4,194,663, Cl. 226-139.000.

Pickering, Keldon S.; and Ferguson, Keith T., to C. R. Bard, Inc. Preconnected catheter drainage system. 4,194,509, Cl. 128-350.00R.

Pierce, Stanley L., Jr.: *See—*
Nichols, Robert W.; and Pierce, Stanley L., Jr., 4,194,604, Cl. 192-3.300.

Pierrel, Michel, to Pont-A-Mousson S.A. Process and device for centrifugally casting spheroidal graphite cast iron pipes. 4,194,554, Cl. 164-301.000.

Pieters, Wim J. M.; Gates, William E.; Carlson, Emery J.; and Wilkalis, John E., to Allied Chemical Corporation. Catalyst and process for the production of chlorofluorinated hydrocarbons. 4,194,990, Cl. 252-441.000.

Pilkington Brothers Limited: *See—*
Wright, Donald C.; Marsh, Brian; and Wiechers, Willem, 4,194,898, Cl. 65-114.000.

Pino, James J.: *See—*
Ueltz, Herbert F. G.; Dashineau, Melvin A.; and Pino, James J., 4,194,887, Cl. 51-309.000.

PINTEK, Inc.: *See—*
Hatch, David A., 4,194,803, Cl. 339-99.00R.

Pioch, Peter P.; and Bachmann, Rainer, to Black & Decker Inc. Lawnmower. 4,194,345, Cl. 56-17.500.

Pioneer Electronic Corporation: *See—*
Suganuma, Hisashi, 4,195,274, Cl. 334-15.000.

Piquot, Gerard, to Automobiles Peugeot. Device for regulating the angle of elevation of the headlamps of a vehicle. 4,195,327, Cl. 362-66.000.

Pitney Bowes Inc.: *See—*
Sansome, Ronald P., 4,195,316, Cl. 358-285.000.

Placey, Pat E.: *See—*
Congleton, Wayne L.; and Placey, Pat E., 4,194,682, Cl. 229-45.0EC.

Plantard, Dominique: *See—*
Levecque, Marcel A.; Battigelli, Jean A.; and Plantard, Dominique, 4,194,897, Cl. 65-5.000.

Plessers, Hendrik S.: *See—*
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,194,625, Cl. 206-455.000.

Plessy Handel und Investments A.G.: *See—*
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Plociennik, Zofia: *See—*
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Ploeg, Andy M. Power reel retriever. 4,194,702, Cl. 242-86.50R.

Plough, Inc.: *See—*
Kingsford, Ted I., 4,194,848, Cl. 401-5.000.

Poclain: *See—*
Stoufflet, Rene G.; and Yeou, Victor, 4,194,365, Cl. 60-468.000.

Polaroid Corporation: *See—*
Borror, Alan L.; Cincotta, Louis; Ellis, Ernest W.; and Foley, James W., 4,195,180, Cl. 544-33.000.
Chiang, Yunn H., 4,195,038, Cl. 260-586.00C.
Cutler, Norman W., Jr., 4,194,423, Cl. 83-589.000.
Ruck, Bernard W.; Stella, Joseph A.; and Bullock, Edward K., 4,194,816, Cl. 352-130.000.

Politechnika Gdanska: *See—*
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Pont-A-Mousson S.A.: *See—*
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Popova, Galina I.: *See—*
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Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., 4,195,019, Cl. 260-17.200.
Poppe, Willy. Foam spring. 4,194,255, Cl. 5-481.000.
Popplewell, James M.; Acton, Constance F.; and Brock, Andrew J., to Olin Corporation. Corrosion resistant copper base alloys for heat exchanger tube. 4,194,928, Cl. 148-2.000.
Porkert, Helmut: *See—*
Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, 4,195,032, Cl. 260-453.0PH.
Post Office, The: *See—*
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Potocnik, Vinko: *See—*
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Poulain, Claude: *See—*
Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, 4,195,015, Cl. 260-45.75C.
Pounds, Walter R.; and Dunlap, Bill D., to KB-Denver, Inc. Switching assemblies. 4,195,210, Cl. 200-159.00A.
Power-Matic Corporation: *See—*
Gogins, Laird B., 4,194,407, Cl. 74-117.000.
Powers, Edward J.: *See—*
Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., 4,195,052, Cl. 264-210.500.
PPG Industries, Inc.: *See—*
Bierschenk, Thomas R.; Pettit, Rowland; and Nielsen, Donald R., 4,195,190, Cl. 568-860.000.
Killmeyer, Charles W., 4,194,873, Cl. 425-93.000.
Price-Pfister Brass Mfg. Co.: *See—*
Tsuei, Chang-Ling, 4,194,252, Cl. 4-199.000.
Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., to Sperry Corporation. High density bias linearized magnetic recording system utilizing Nyquist bandwidth partial response transmission. 4,195,318, Cl. 360-39.000.
Priddy, Duane B., to Dow Chemical Company, The. Devolatilizing polymers of styrene and acrylic or methacrylic acid. 4,195,169, Cl. 528-500.000.
Pries, Erich, to Dr. C. Otto & Comp. G.m.b.H. Coke oven quenching car. 4,194,951, Cl. 202-227.000.
Prima International: *See—*
Schultz, Wilderich C., 4,194,714, Cl. 248-308.000.
Prince Corporation: *See—*
Prince, Edgar D., 4,194,585, Cl. 180-90.000.
Prince, Edgar D., to Prince Corporation. Instrument mounting system. 4,194,585, Cl. 180-90.000.
Prince, Paul R., to Hughes Aircraft Company. CTD charge subtraction transversal filter. 4,195,273, Cl. 333-165.000.
Procter & Gamble Company, The: *See—*
Marsh, Robert A.; Mackie, Gordon J.; and Hale, Peter, 4,195,077, Cl. 424-70.000.
Seguine, Edward S., 4,194,956, Cl. 204-186.000.
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Proudian, Andrew P., to Second Foundation, Inc. Ultrasonic focusing system. 4,194,510, Cl. 128-660.000.
Przybyla, Franciszek J.: *See—*
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Puhich, Joseph M. Programmable bobbin thread detector. 4,195,292, Cl. 340-677.000.
Pullman Incorporated: *See—*
Dehner, James L., 4,194,451, Cl. 105-416.000.
Miller, Roy W., 4,194,450, Cl. 105-253.000.
Yates, Donald B., 4,194,595, Cl. 188-52.000.
Punja, Nazim, to Imperial Chemical Industries Limited. 1-Acetyl or 1-cyano-2(2,2-dichlorovinyl)-3,3-dimethyl cyclopropane. 4,195,033, Cl. 260-464.000.
Purrer, Alois: *See—*
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Puthawala, Anwer, to Kraftwerk Union Aktiengesellschaft. Method for binding liquid-containing radioactive wastes and kneading machine therefor. 4,194,842, Cl. 366-76.000.
Putt, Sterling R.: *See—*
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Pytlarz, Charles P.; and Rost, Richard L., to Zenith Radio Corporation. Lockable adjustment means for self-converging adjustable yoke assembly. 4,195,315, Cl. 358-248.000.
Q.P. Corporation: *See—*
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R & R Agri-Products, Inc.: *See—*
Rettkowski, Gale F., 4,194,573, Cl. 172-400.000.
Rabatin, Jacob G., to General Electric Company. Color contrast radiographic device. 4,195,228, Cl. 250-483.000.
Rabinovich, Aron A.: *See—*
Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,195,236, Cl. 307-252.00K.
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Rado, William G., to Ford Motor Company. Voltage distributor for a spark ignition engine. 4,194,480, Cl. 123-148.0ND.
Radtke, Schrade F.; Carr, Dodd S.; and Kronstein, Max, to International Lead Zinc Research Organization, Inc. Water-dispersible coatings containing boron nitride for steel casting dies. 4,195,002, Cl. 260-29.20E.
Rainwater, Lawrence L., to Sperry Corporation. Dielectric slab polarizer. 4,195,270, Cl. 333-21.00A.
Randall, Eugene J. Solar collector panel. 4,194,491, Cl. 126-417.000.
Rangan, Karur S. Machine sortable mailing envelope. 4,194,631, Cl. 206-610.000.
Rapp, Heinz; Biedermann, Ernst; and Bartel, Siegfried, to AGFA-Gevaert, A.G. Photographic copying machine with carrier structure carrying format masks to and away from the copying station. 4,194,836, Cl. 355-75.000.
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Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.
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Rautenbach, Jacobus J., to Fowler Holdings Limited. Load supporting means and the formation thereof. 4,195,111, Cl. 428-218.000.
Rauterberg, Ulf, to Siemens Aktiengesellschaft. Electromagnetic relay and method for its adjustment. 4,195,276, Cl. 335-151.000.
Raytheon Company: *See—*
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RCA Corporation: *See—*
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Bell, Alan E.; and Bartolini, Robert A., 4,195,313, Cl. 179-100.10G.
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D'Amato, Ralph J.; and Stone, Robert P., 4,195,248, Cl. 313-403.000.
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Goel, Jitendra, 4,194,285, Cl. 29-579.000.
Hawrylo, Frank Z., 4,195,308, Cl. 357-67.000.
Kimbrough, Laurence B.; and Van Renssen, Marinus, 4,194,463, Cl. 118-409.000.
Rea, David M. Board game apparatus. 4,194,741, Cl. 273-243.000.
Reddy, Robert R. Telescoping slip-together tubing joint. 4,194,765, Cl. 285-27.000.
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Reed, Terry J.; Smith, Jack R.; and Kiscaden, Roy W., to Westinghouse Electric Corp. Combined cycle electric power plant having an improved digital/analog hybrid gas turbine control system. 4,195,231, Cl. 290-40.00R.
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Reiche, Werner; and Trutzschler, Hans, to Trutzschler GmbH & Co. KG. Apparatus for removing cotton or the like from a bale. 4,194,269, Cl. 19-81.000.
Reichmann, Wolfgang; Konig, Klaus; and Koster, Johannes, to Bayer Aktiengesellschaft. Process for the continuous production of monoisocyanates. 4,195,031, Cl. 260-453.00P.
Reid, John D., to United States of America, Navy. Dual channel proximity fuze. 4,195,294, Cl. 343-7.0PF.
Reid, Lee R.; and Ratliff, Charles R., to Texas Instruments Incorporated. Multiprobe test system and method of using same. 4,195,259, Cl. 324-158.00P.
Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, to Daimler-Benz Aktiengesellschaft. Hollow bearer for vehicles. 4,194,763, Cl. 280-784.000.
Reifenhauser KG: *See—*
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Renner, Carl A., to Du Pont de Nemours, E. I., and Company. Process for preparing a methyl-substituted benzaldehyde. 4,195,040, Cl. 260-599.000.

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Research Corporation: *See*—
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Respiratory Care, Inc.: *See*—
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Restaino, Alfred J.: *See*—
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Rettkowski, Gale F., to R & R Agri-Products, Inc. Agricultural subsoil implement including flow divider for wheel assemblies. 4,194,573, Cl. 172-400.000.

Revlon, Inc.: *See*—
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Reynolds, James R., to Milliken Research Corporation. Water jet loom. 4,194,540, Cl. 139-291.00R.

Reynolds, Kim A.: *See*—
Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., 4,194,667, Cl. 228-4.100.

Reynolds, Lionel A. Vibrator devices. 4,194,405, Cl. 74-87.000.

Rheocast Corporation: *See*—
Bennett, Foster C., 4,194,552, Cl. 164-71.000.

Rhine, Samuel A.; Thompson, Joseph F.; and Palmer, Catherine G., to Indiana University Foundation. Antenatal cell extracting device and method. 4,194,513, Cl. 128-750.000.

Ribka, Joachim: *See*—
Hunger, Klaus; and Ribka, Joachim, 4,195,020, Cl. 260-157.000.

Richards, Donald L., to Eaton Corporation. Compression fitting. 4,194,770, Cl. 285-206.000.

Richards, Elmer A., to Eaton Corporation. Blocked transmission. 4,194,410, Cl. 74-339.000.

Richards, William H. G., to Burroughs Wellcome Co. Synergistic composition for malaria. 4,195,089, Cl. 424-258.000.

Richardson, Edward G.; and Williamson, Keith H., to National Research Development Corporation. Means for protecting hazardous areas against electrical faults. 4,195,325, Cl. 361-56.000.

Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, to Krupp-Koppers GmbH; and Bergwerksverband. Method of monitoring and controlling the travel and operation of the travelling accessory machines in a coking installation. 4,194,686, Cl. 235-376.000.

Ricoh Company, Ltd.: *See*—
Abe, Shintaro; and Haganuma, Tomoyuki, 4,195,353, Cl. 364-900.000.
Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, 4,194,830, Cl. 355-3.0DD.
Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,195,260, Cl. 324-204.000.
Tani, Tatsuo; Ota, Sakae; and Kono, Masao, 4,194,837, Cl. 355-75.000.

Rieter Machine Works Ltd.: *See*—
Fritschi, Bruno; Malina, Ludek; and Oestreicher, Max, 4,194,866, Cl. 414-459.000.
Schellenberg, Hans; and Vetterli, Walter, 4,194,350, Cl. 57-352.000.

Rife, Dwight A., to Smith International, Inc. Seal protector for a sealed bearing rock bit. 4,194,795, Cl. 308-8.200.

Rigbey, Leonard J.: *See*—
Cox, Allen R.; Pascual, Rafael; and Rigbey, Leonard J., 4,195,322, Cl. 360-103.000.

Rillie, Robert J.: *See*—
Dierks, Robert P.; and Rillie, Robert J., 4,195,110, Cl. 428-218.000.

Ripple, David E., to Lubrizol Corporation, The. Haloalkyl hydroxyaromatic condensation products as fuel additives. 4,194,886, Cl. 44-70.000.

Robbins, David J.; and Bimberg, Dieter H., to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Luminescent material and preparation and use thereof. 4,195,226, Cl. 250-363.00R.

Robert Bosch GmbH: *See*—
Baresel, Detlef, 4,194,471, Cl. 123-119.0EC.
Baresel, Detlef; Scharner, Peter; Huth, Gerhard; and Gillert, Winfried, 4,194,994, Cl. 252-518.000.
Moller, Heinz; and Hess, Joachim, 4,195,241, Cl. 310-168.000.
Nonnenmacher, Gerhard, 4,194,362, Cl. 60-431.000.
Pahl, Arnold; van der Kolk, Hans-Jurgen; and Lixenfeld, Manfred, 4,194,361, Cl. 60-388.000.
Pahl, Arnold; and Nonnenmacher, Gerhard, 4,194,364, Cl. 60-445.000.

Roberts, Ronald W., to Tektronix, Inc. Zero delay trigger view. 4,195,252, Cl. 315-392.000.

Robertshaw Controls Company: *See*—
Scott, Douglas R., 4,194,687, Cl. 236-87.000.

Robertson, George H.: *See*—
Wheeler, Ian R.; and Robertson, George H., 4,194,921, Cl. 106-309.000.

Robinsky, Eli I. Gravitational separator having membrane baffles therein. 4,194,976, Cl. 210-137.000.

Roche, Olivier C.: *See*—
Buresi, Georges; Roche, Olivier C.; and Viallard, Michel B., 4,194,568, Cl. 166-340.000.

Rodder, Karl-Martin: *See*—
Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, 4,195,141, Cl. 525-328.000.

Roe, Justus G., to Great Neck Saw Manufacturers, Inc. Tape measure. 4,194,703, Cl. 242-107.200.

Roger, Jack, to Compagnie Generale des Etablissements Michelin. Tires. 4,194,548, Cl. 152-361.00R.

Rogers, Scott A. Planetarium educational device. 4,194,306, Cl. 35-44.000.

Rohm and Haas Company: *See*—
Agui, Wataru; Higosaki, Nobuyuki; Yamanari, Koichiro; Furukawa, Toshio; and Kuyama, Hiroshi, 4,195,028, Cl. 260-42.430.

Rohr Industries, Inc.: *See*—
Dickenson, Robert A., 4,194,692, Cl. 239-265.390.

Rohrer, George A., to Technovation, Inc. Process for manufacturing a ferroelectric device and devices manufactured thereby. 4,195,355, Cl. 365-145.000.

Rolls-Royce Limited: *See*—
Beauchamp, Derek J.; and Weston, Donald L. A., 4,195,216, Cl. 219-121.00P.

Rooney, Clarence S.: *See*—
Atkinson, Joseph G.; Belanger, Patrice C.; Remy, David C.; and Rooney, Clarence S., 4,195,091, Cl. 424-267.000.

Rosenberg, Richard H.: *See*—
Bahel, Vijay O.; Kuehner, Richard; and Rosenberg, Richard H., 4,194,368, Cl. 62-238.000.

Rosenberger, Roy R., to Nalco Chemical Company. Device for determining settling rates of solids or particulate bearing liquid in a continuous process or flowing stream. 4,194,391, Cl. 73-61.400.

Rosheim, Mark E. Hydraulic servo mechanism. 4,194,437, Cl. 92-120.000.

Roslik-Kaminska, Danuta: *See*—
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Ross, Donald R., Jr. Trolley rail and flying pickup. 4,194,603, Cl. 191-23.00A.

Rossler, Eleanor J.; and Przybyla, Franciszek J., to P. R. Mallory & Co. Inc. Hydrogen evolution inhibitors for cells having zinc anodes. 4,195,120, Cl. 429-50.000.

Rossmann, Kurt: *See*—
Barth, Gunter; von Langsdorff, Fritz; and Rossmann, Kurt, 4,194,853, Cl. 404-73.000.

Rost, Richard L.: *See*—
Pytlarz, Charles P.; and Rost, Richard L., 4,195,315, Cl. 358-248.000.

Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of furnace black. 4,195,068, Cl. 423-455.000.

Rottloff, Gunther: *See*—
Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,195,132, Cl. 521-155.000.

Rounbehler, David P.; and Fine, David H., to Thermo Electron Corporation. Method and apparatus for air sampling and filtration. 4,194,884, Cl. 23-232.00R.

Roussel Uclaf: *See*—
Barzaghi, Fernando; and Bianchi, Mario, 4,195,088, Cl. 424-256.000.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,195,081, Cl. 424-263.000.

ROVEMA Verpackungsmaschinen GmbH & Co. KG.: *See*—
Schmachtel, Florian, 4,194,438, Cl. 93-20.000.

Rubinshtein, Abram: *See*—
Rubinshtein, Efim; and Rubinshtein, Abram, 4,194,277, Cl. 29-148.40C.

Rubinshtein, Efim; and Rubinshtein, Abram. Method and device for stamping ball retainers. 4,194,277, Cl. 29-148.40C.

Ruck, Bernard W.; Stella, Joseph A.; and Bullock, Edward K., to Polaroid Corporation. High speed rotating drive termination system. 4,194,816, Cl. 352-130.000.

Ruebel, Jack K.: *See*—
Nottke, James E.; and Ruebel, Jack K., 4,194,650, Cl. 222-57.000.

Ruegg, Frank A.; and Vitriol, William A., to Beckman Instruments, Inc. Predetermined temperature coefficient capacitor. 4,195,326, Cl. 361-274.000.

Rug Specialist Inc.: *See*—
Finley, Bill G.; and Finley, Terry L., 4,194,262, Cl. 15-314.000.

Russell, Alexander H.; and McClinton, John L., to Burns & Russell Company of Baltimore City. Ceramic coated quartz particles. 4,195,010, Cl. 260-40.00R.

Russell, Walter W.: *See*—
Woodhouse, Ronald; and Russell, Walter W., 4,194,893, Cl. 55-168.000.

Rybny, Charles B.: *See*—
Nowak, Michael T.; and Rybny, Charles B., 4,194,955, Cl. 204-159.150.

S.I.A.P. Societa Industriale Agglomerati e Prodotti Petroliferi S.p.A.: *See*—
Gambacorta, Mario, 4,194,901, Cl. 75-48.000.

Sabel, Hans-Dieter: *See*—
Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.

Sabourin, Edward T.: *See*—
Schulz, Johann G. D.; and Sabourin, Edward T., 4,195,185, Cl. 562-407.000.
Schulz, Johann G. D.; and Sabourin, Edward T., 4,195,186, Cl. 562-407.000.

Safford, John W., Jr., to Abbott Laboratories. Process for producing a soluble rubella antigen. 4,195,074, Cl. 424-12.000.

Safranko, John W.; Burnett, Craig R.; and Kilburn, James E., to United States of America, Air Force. Process for reclaiming aircraft fuel tank purging fluids. 4,194,924, Cl. 134-12.000.

Safronov, Vladimir E.: *See*—
Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor S.; and Safronov, Vladimir E., 4,195,354, Cl. 365-105.000.

Saft-Societe des Accumulateurs Fixes et de Traction: *See*—
Jumel, Yves, 4,195,123, Cl. 429-194.000.

Sahira, Kensyo: *See*—
Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.

Saiki, Junichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with an exhaust gas recirculation system. 4,194,475, Cl. 123-119.00A.

Saint-Gobain Industries: *See*—
Levecque, Marcel A.; Battigelli, Jean A.; and Plantard, Dominique, 4,194,897, Cl. 65-5.000.

Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, to Lion Dentifrice Co. Ltd., The. 2',6'-Dihydroxy-9-(2,5-dihydroxyphenyl)octylphenone and its use as an antioxidant. 4,195,101, Cl. 426-546.000.

Sakaev, Vagiz S.: *See*—
Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,195,236, Cl. 307-252.00K.

Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, to Toko, Inc. Noise cancelling system for FM receiver. 4,195,203, Cl. 179-1.0GD.

Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, to Ricoh Company, Ltd. Apparatus for sensing deterioration of developing substance including ferromagnetic carrier and non-magnetic toner particles. 4,195,260, Cl. 324-204.000.

Sakamoto, Tamotsu: *See*—
Tsukamoto, Takuzo; Sakamoto, Tamotsu; and Okamoto, Yoshikazu, 4,194,465, Cl. 118-658.000.

Sakamoto, Tomonori: *See*—
Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.

Sakanaka, Yasuhiro: *See*—
Hayashi, Takao; Sakanaka, Yasuhiro; and Shimizu, Akihiko, 4,194,999, Cl. 260-17.00R.

Sakemi, Hiroji; Morishita, Tomohiro; Numata, Hideji; and Ono, Takuro, to Asahi Glass Company, Ltd. Fired ceramic having dense and low thermal expansion characteristics. 4,194,917, Cl. 106-62.000.

Sakonooka, Akihiko: *See*—
Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.

Salve S.A.: *See*—
Spiegelberg, Hans, 4,194,624, Cl. 206-441.000.

Sanders, Fletcher T. Broadhead and field point extractor tool. 4,194,278, Cl. 29-264.000.

Sandoz Ltd.: *See*—
Fehr, Theodor; and Stadler, Paul, 4,195,086, Cl. 424-250.000.

Sandvik Aktiebolag: *See*—
Kling, Knut A., 4,194,794, Cl. 308-3.800.

Sandvik Conveyor GmbH: *See*—
Hrivnak, John G., 4,194,614, Cl. 198-487.000.

Sanger, Georg; and Franz, Alfred K., to Organisation Europeenne de Recherches. Gas leakage detection apparatus. 4,195,224, Cl. 250-289.000.

Sansome, Ronald P., to Pitney Bowes Inc. Apparatus and method for correcting imperfection in a polygon used for laser scanning. 4,195,316, Cl. 358-285.000.

Santer, J. Owen: *See*—
Anderson, George J.; Santer, J. Owen; and Desmond, Timothy F., 4,195,116, Cl. 428-524.000.

Santoro, Giovanni, to Werbetronic AG. Push-button operated device for storing a plurality of positions of a movable member. 4,194,403, Cl. 74-10.330.

Sanyo Kiki Kabushiki Kaisha: *See*—
Imada, Yusuke, 4,194,436, Cl. 91-420.000.

Sara, Raymond V.: *See*—
Elbert, Raymond J.; and Sara, Raymond V., 4,194,673, Cl. 228-219.000.

Sasaki, Kitaro: *See*—
Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, 4,195,246, Cl. 313-292.000.

Sasaki, Tadashi: *See*—
Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.

Sato, Akihiko: *See*—
Nakano, Yoshiyuki; Sato, Akihiko; and Araki, Yoshitaka, 4,194,820, Cl. 354-43.000.

Sato, Masato; and Inoue, Takemi, to Kawasaki Jukogyo Kabushiki Kaisha. Vibration absorbed engine exhaust means for motor propelled boats. 4,194,460, Cl. 115-73.000.

Sato, Takashi, to Hitachi, Ltd. Address buffer circuit in semiconductor memory. 4,195,238, Cl. 307-270.000.

Sato, Yasushi; Ibaragi, Toshio; Ishihara, Masanobu; and Honda, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Impact-resistant styrene resin composition. 4,195,136, Cl. 525-71.000.

Satoh, Akira; and Ishizaka, Teisuke, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Fujikoshi. Planetary speed reducer. 4,194,414, Cl. 74-674.000.

Satow, Haruhiko; Ueda, Tadakazu; and Ogasawara, Ikuo, to Toyo Kogyo Co., Ltd.; and NGK Spark Plug Co., Ltd. Ignition means for rotary piston engines. 4,194,486, Cl. 123-210.000.

Savage, John M., Jr. Lens clip and cap for led or light unit assembly. 4,195,330, Cl. 362-226.000.

Savit, Joseph, to AES Technology Systems, Inc. Folded paper edge opening process. 4,194,342, Cl. 53-492.000.

Sawitzki, Friedhelm: *See*—
Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, 4,195,306, Cl. 357-38.000.

Saylor, B. Franklin: *See*—
Matulich, Dan S.; and Saylor, B. Franklin, 4,194,357, Cl. 60-39.020.

SCA Development Aktiebolag: *See*—
Wiberg, Karl V., deceased; and Wiberg, Anna-Britta, legal representative, 4,194,299, Cl. 34-124.000.

Scala, Norma, administratrix: *See*—
Burke, Oliver W., Jr., deceased; and Humphreys, Victor T., 4,194,920, Cl. 106-308.00M.

Schad, Anthony G.: *See*—
Vinch, Angelo N.; and Schad, Anthony G., 4,194,804, Cl. 339-103.00M.

Schaefer Equipment Incorporated: *See*—
Cale, Roland E., 4,194,599, Cl. 188-231.000.

Schafer, Tillman H.: *See*—
Miller, Paul H.; and Schafer, Tillman H., 4,195,359, Cl. 367-94.000.

Schandoney, Geraldine: *See*—
Wygal, John F.; Schandoney, Geraldine; and Straus, Dorothy L., 4,194,588, Cl. 180-279.000.

Scharner, Peter: *See*—
Baresel, Detlef; Scharner, Peter; Huth, Gerhard; and Gillert, Winfried, 4,194,994, Cl. 252-518.000.

Schellenberg, Hans; and Vetterli, Walter, to Rieter Machine Works Ltd. Thread deflecting element for a draw-texturing machine. 4,194,350, Cl. 57-352.000.

Scheller, Thomas: *See*—
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.

Scherer, Richard M., to Chambers Corporation. Oven liner and rack design. 4,194,495, Cl. 126-339.000.

Schermann, Walter; Holst, Arno; and Fischer, Wilhelm, to Hoechst Aktiengesellschaft. Water vapor absorbing and transmitting adhesive, a process for the manufacture of this adhesive and use thereof. 4,194,995, Cl. 260-14.000.

Schiek, Burkhard; and Kohler, Jurgen, to U.S. Philips Corporation. Broad-band 180° phase shifter. 4,195,271, Cl. 333-161.000.

Schievelbein, Vernon H., to Texaco Inc. High conformance enhanced oil recovery process. 4,194,563, Cl. 166-273.000.

Schievelbein, Vernon H., to Texaco Inc. Oil recovery method. 4,194,564, Cl. 166-274.000.

Schlaf, Helmut: *See*—
Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.

Schley, Kenneth E. Multiple fluid storage container. 4,194,619, Cl. 206-217.000.

Schlicht, Raymond C.: *See*—
Hammond, Kenneth G.; and Schlicht, Raymond C., 4,194,981, Cl. 252-46.700.

Schmachtel, Florian, to ROVEMA Verpackungsmaschinen GmbH & Co. KG. Flexible tube bagging machine. 4,194,438, Cl. 93-20.000.

Schmidt, Robert R.: *See*—
Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., 4,195,181, Cl. 544-316.000.

Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,099, Cl. 426-536.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,100, Cl. 426-536.000.

Schmitz, William L., to Vac-O-Cast, Inc. Containerized hypodermic module. 4,194,505, Cl. 128-218.00D.

Schneider, Wolfgang; and Niehaves, Kurt, to Chemische Werke Huls AG. Method for the production of aqueous, finely dispersed, shelf-stable silicone oil emulsions. 4,194,988, Cl. 252-312.000.

Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,195,027, Cl. 260-397.200.

Schoeff, John A., to Motorola, Inc. Analog-to-digital converter system. 4,195,235, Cl. 307-229.000.

Scholten, Heinz: *See*—
Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,195,162, Cl. 528-313.000.

Schon, Franz: *See*—
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,878, Cl. 8-39.00B.

Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,879, Cl. 8-39.00B.
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,880, Cl. 8-41.00B.
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,881, Cl. 8-41.00B.
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,882, Cl. 8-41.00B.
Schoning, Rudolf: *See*—
Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, 4,194,798, Cl. 308-189.00R.
Schonwald, Siegfried; Breyer, Eberhard; and Trojahn, Hans-Georg, to Siemens Aktiengeseilschaft. Pressure limiting valve. 4,194,527, Cl. 137-543.000.
Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, to Siemens Aktiengesellschaft. Side channel compressor with at least one bearing arranged at the housing cover of the side channel compressor. 4,194,798, Cl. 308-189.00R.
Schopp, Edgar. Irrigation emitter system. 4,194,695, Cl. 239-542.000.
Schrewe, Hans, to Mannesmann Aktiengesellschaft. Tundish for continuous casting. 4,194,555, Cl. 164-438.000.
Schrishuhn, Delbert, Jr. Ski-shoe-attachment apparatus for skateboards. 4,194,753, Cl. 280-13.000.
Schroder, Staffan H. Method and apparatus for sorting and classifying timber. 4,195,346, Cl. 364-475.000.
Schroter, Herbert: *See*—
Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,195,090, Cl. 424-263.000.
Schrotz, Kurt: *See*—
Becker, Werner; and Schrotz, Kurt, 4,194,448, Cl. 101-295.000.
Schubert & Salzer: *See*—
Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.
Schulein, Robert B.: *See*—
Anderson, C. Roger; and Schulein, Robert B., 4,194,590, Cl. 181-186.000.
Schultz, Wilderich C., to Prima International. Foldable purse hanger and whistle. 4,194,714, Cl. 248-308.000.
Schulz, Johann G. D.; and Sabourin, Edward T., to Gulf Research and Development Company. Process of preparing organic acids. 4,195,185, Cl. 562-407.000.
Schulz, Johann G. D.; and Sabourin, Edward T., to Gulf Research and Development Company. Process for preparing organic acids. 4,195,186, Cl. 562-407.000.
Schulz, Klaus-Dieter: *See*—
Hausen, Peter; and Schulz, Klaus-Dieter, 4,194,903, Cl. 75-58.000.
Schuro Heinz Schurmann GmbH & Co.: *See*—
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.
Schwab, James J.; and Cooper, Jacob, to Air Pollution Systems, Inc. Electrostatic precipitator. 4,194,888, Cl. 55-2.000.
Schwartz, Willis T., Jr.: *See*—
Dorfman, Edwin; Hindersinn, Raymond R.; and Schwartz, Willis T., Jr., 4,195,014, Cl. 260-45.75R.
Schwarz, Peter: *See*—
Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.
Schwetz, Karl A.; and Vogt, Georg, to Elektroschmelzwerk Kempten GmbH. Process for the production of dense sintered shaped articles of polycrystalline boron carbide by pressureless sintering. 4,195,066, Cl. 423-291.000.
Science Union et Cie, Societe Francaise de Recherche Medicale: *See*—
Fontanges, Robert, 4,195,076, Cl. 424-43.000.
SCM Corporation: *See*—
Turpin, Edward T., 4,195,102, Cl. 427-27.000.
Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system and parts therefor and methods of making the same. 4,194,687, Cl. 236-87.000.
Scott & Fetzer Company, The: *See*—
Gretz, Thomas J., 4,194,768, Cl. 285-178.000.
Scott, Fredric W.: *See*—
Hoshino, Yasutaka; and Scott, Fredric W., 4,195,130, Cl. 435-235.000.
Scott, Lewis A.; and Gibson, Duane M., to Omark Industries, Inc. Splitting device. 4,194,544, Cl. 144-193.00D.
Scott, Raymond G.; and Wysocki, Lawrence S., to Champion International Corporation. Openable container cover. 4,194,680, Cl. 229-43.000.
Scott, Raymond G.; and Wysocki, Lawrence S., to Champion International Corporation. Openable container cover. 4,194,681, Cl. 229-43.000.
Seberg, Charles H.: *See*—
Harms, Jack L.; and Seberg, Charles H., 4,194,504, Cl. 128-214.400.
Second Foundation, Inc.: *See*—
Proudian, Andrew P., 4,194,510, Cl. 128-660.000.
Segerson, James M.; and Clawson, Bert G. Mechanism for releasably attaching an object to a kite. 4,194,709, Cl. 244-155.00R.
Seguine, Edward S., to Procter & Gamble Company, The. Method for dewaxing high-resistivity oils. 4,194,956, Cl. 204-186.000.
Sehnal, Richard: *See*—
Pechacek, Ctirad; and Sehnal, Richard, 4,194,418, Cl. 74-866.000.
Seitetsu Kagaku Co., Ltd.: *See*—
Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.
Seitz, Alan F., to Data Motion, Inc. Sheet feed tractor. 4,194,660, Cl. 226-74.000.
Seki, Shigeo: *See*—
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,195,170, Cl. 536-10.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.
Sekiya, Setsuro: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Preparation of cationic amine-functional copolymers. 4,195,147, Cl. 526-312.000.
Selby, Donald W.: *See*—
Swindler, David L.; and Selby, Donald W., 4,194,378, Cl. 70-363.000.
Senco Products, Inc.: *See*—
Siegmann, Carl, 4,194,664, Cl. 227-8.000.
Sessa, Terenzio. Motor vehicle window regulator. 4,194,605, Cl. 192-12.00R.
Sethi, Gurdip S., to Eastman Kodak Company. Photographic film cartridge assembly and camera. 4,194,822, Cl. 354-121.000.
Sevastyanov, Boris A.: *See*—
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.
Sexsmith, Frederick H.; and Hornaman, E. Chris, to Lord Corporation. Adhesive-promoting compositions. 4,195,140, Cl. 525-523.000.
Sextro, Gunter: *See*—
Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.
Shah, Hasmukh T.: *See*—
Conway, Raymond J.; and Shah, Hasmukh T., 4,194,432, Cl. 89-41.00C.
Shah, Raj: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,195,147, Cl. 526-312.000.
Shannon, Richard E.: *See*—
Oglander, Allen H.; and Shannon, Richard E., 4,194,646, Cl. 221-73.000.
Sharkey, Dennis R.: *See*—
Briggs, Peter D.; and Sharkey, Dennis R., 4,194,941, Cl. 156-361.000.
Sharp Kabushiki Kaisha: *See*—
Kakutani, Nobuyasu, 4,195,348, Cl. 364-562.000.
Sharpe, Thomas H. Lift augmenting device for aircraft. 4,194,707, Cl. 244-9.000.
Shea, Frank J. Fastener for a pay telephone station coin box. 4,194,775, Cl. 292-307.00R.
Sheard, Dennis R.; and Taylor, Roger W., to Imperial Chemical Industries Limited. Process for molding a non-woven fabric. 4,195,112, Cl. 428-288.000.
Sheetz, Charles E.: *See*—
Myers, Harold E.; and Sheetz, Charles E., 4,194,343, Cl. 53-493.000.
Sheffner, Aaron L. Topical application of thioglycolic acid in the treatment of dermatological conditions. 4,195,095, Cl. 424-317.000.
Sheldon, John D.: *See*—
DuBois, Edmund H.; and Sheldon, John D., 4,194,609, Cl. 192-0.096.
Shell Oil Company: *See*—
Kortbeek, Andras G. Th. G.; van der Nat, Adrianus A.; van der Linden Lemmers, Wilhelmina J. M.; and Sjardijn, Willem, 4,195,069, Cl. 423-492.000.
Miller, William V., 4,195,075, Cl. 424-14.000.
Van Acker, Eduard M. A. A. J.; Kooijmans, Petrus G.; and de Heer, Aart, 4,195,004, Cl. 260-29.6TA.
Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, to Sumitomo Chemical Company, Limited. Process for the purification of highly crystalline polyolefins. 4,195,145, Cl. 526-137.000.
Shilov, Gennady G.: *See*—
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.
Shimano Industrial Company Limited: *See*—
Nagano, Masashi, 4,194,409, Cl. 74-217.00B.
Shimizu, Akihiko: *See*—
Hayashi, Takao; Sakanaka, Yasuhiro; and Shimizu, Akihiko, 4,194,999, Cl. 260-17.00R.
Shimizu, Kaoru: *See*—
Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, 4,194,830, Cl. 355-3.0DD.
Shinbo, Masafu: *See*—
Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.
Shinmura, Tomisaku. Rolling type athletic apparatus. 4,194,751, Cl. 280-11.200.
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Indicator meters for automobiles and illumination therefor. 4,194,587, Cl. 180-90.000.

Shinohara, Makoto: *See—*
Watanabe, Makio; Aoyama, Kaneyosi; and Shinohara, Makoto, 4,194,556, Cl. 165-51.000.
Shiode, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Exposure device. 4,194,835, Cl. 355-67.000.
Shiomi, Masanao; Yokoya, Yuuji; and Harata, Motowo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Wheel camber adjusting means for vehicles. 4,194,760, Cl. 280-661.000.
Shirato, Yoshiaki: *See—*
Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, 4,194,812, Cl. 350-357.000.
Shonts, David J.: *See—*
Matteson, Lawrence J.; and Shonts, David J., 4,194,818, Cl. 354-33.000.
Shur-Line Manufacturing Co., Inc.: *See—*
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,194,852, Cl. 403-299.000.
Shure Brothers, Incorporated: *See—*
Anderson, C. Roger; and Schulein, Robert B., 4,194,590, Cl. 181-186.000.
Groh, Allen R.; Karlov, Frank J.; and Happ, Lawrence R., 4,194,744, Cl. 274-37.000.
Siddi, Giorgio: *See—*
Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, 4,195,036, Cl. 260-561.0HL.
Sidor, Edward J.; and Sidor, William E. Golf club holder. 4,194,547, Cl. 150-1.50R.
Sidor, William E.: *See—*
Sidor, Edward J.; and Sidor, William E., 4,194,547, Cl. 150-1.50R.
Sieber, Paul: *See—*
Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, 4,195,314, Cl. 455-185.000.
Siegert, Louis D.: *See—*
Voorheis, Temple S.; and Siegert, Louis D., 4,194,874, Cl. 431-8.000.
Siegmann, Carl, to Senco Products, Inc. Firing safety for a pneumatic nailer. 4,194,664, Cl. 227-8.000.
Siehr, Richard L.: *See—*
Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., 4,194,638, Cl. 212-46.00R.
Siemens Aktiengesellschaft: *See—*
Hoffmann, Kurt, 4,194,283, Cl. 29-571.000.
Leupelt, Uwe, 4,195,302, Cl. 343-704.000.
Rauterberg, Ulf, 4,195,276, Cl. 335-151.000.
Schonwald, Siegfried; Breyer, Eberhard; and Trojahn, Hans-Georg, 4,194,527, Cl. 137-543.000.
Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, 4,194,798, Cl. 308-189.00R.
Udvardi-Lakos, Janos, 4,195,233, Cl. 307-66.000.
Siemon Company, The: *See—*
Knickerbocker, Robert H., 4,194,256, Cl. 7-107.000.
Silber, Dieter: *See—*
Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, 4,195,306, Cl. 357-38.000.
Siltec Corporation: *See—*
Bonora, Anthony C.; and Lorenz, Karl, 4,194,324, Cl. 51-131.500.
Simone, Giovanni. Modular reticular bearing structure for domed shelters. 4,194,327, Cl. 52-86.000.
Simonovitch, Chaim, to Abic, Ltd. Derivatives of naphthyridine. 4,195,087, Cl. 424-256.000.
Simuro, Ernest G.; Turk, Abraham A.; and Turk, Nathan M. Level and angle attachment for a carpenter's folding ruler. 4,194,295, Cl. 33-458.000.
Singer Company, The: *See—*
Edwards, William J.; and Hurler, Herbert T., 4,194,456, Cl. 112-176.000.
Sipos, Peter A.: *See—*
Phibbs, Murray K.; and Sipos, Peter A., 4,195,034, Cl. 260-465.00E.
Siwersson, Olle L.: *See—*
Tell, Karl G.; Wall, Arne E.; and Siwersson, Olle L., 4,194,615, Cl. 198-502.000.
Sjardijn, Willem: *See—*
Kortbeek, Andras G. Th. G.; van der Nat, Adrianus A.; van der Linden Lemmers, Wilhelmina J. M.; and Sjardijn, Willem, 4,195,069, Cl. 423-492.000.
SKF Kugellagerfabriken GmbH: *See—*
Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, 4,194,752, Cl. 280-11.280.
SKW Trostberg Aktiengesellschaft: *See—*
Gmohling, Werner, 4,194,902, Cl. 75-55.000.
Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., to Celanese Corporation. Steam assisted hydrocarbon oxidation process. 4,195,188, Cl. 562-549.000.
Smirnov, Jury M.: *See—*
Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., 4,194,996, Cl. 260-17.200.
Smith, Douglas J.; and Kutno, Irving L. Articulated travel and educational map with peel-off divisions. 4,194,305, Cl. 35-42.000.
Smith, Edwin R.: *See—*
de Miranda, William R. R.; and Smith, Edwin R., 4,195,195, Cl. 174-68.500.
Smith, Harry A.: *See—*
Kaiser, Mark E.; and Smith, Harry A., 4,195,154, Cl. 528-98.000.
Smith, Horace L., Jr., to Smitherm Industries, Inc. Particulate solids. 4,194,444, Cl. 99-479.000.
Smith International, Inc.: *See—*
Rife, Dwight A., 4,194,795, Cl. 308-8.200.
Smith, Jack R.: *See—*
Reed, Terry J.; Smith, Jack R.; and Kiscaden, Roy W., 4,195,231, Cl. 290-40.00R.
Smith, James T., to National Steel Corporation. Nailable steel floor channel with anti-skid surface. 4,194,330, Cl. 52-177.000.
Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., to Union Carbide Corporation. Epoxide derivatives of ester diol alkoxylates and compositions thereof. 4,195,160, Cl. 528-297.000.
Smith, Roy E., to American Color & Chemical Corporation. Method of lowering the color of effluent which contains aryl azo- or aryl nitro-containing compounds. 4,194,973, Cl. 210-50.000.
Smith, Walter A.; and Harp, Raymond T., to NCR Corporation. Sequential control system. 4,195,339, Cl. 364-200.000.
Smitherm Industries, Inc.: *See—*
Smith, Horace L., Jr., 4,194,444, Cl. 99-479.000.
Snamprogetti, S.p.A.: *See—*
Corbellini, Margherita; and Greco, Alberto, 4,194,992, Cl. 252-442.000.
Snow, John P.; and Callahan, James J., to Houdaille Industries, Inc. Cyclic lubricant distributor valve. 4,194,593, Cl. 184-7.00D.
Snowdon, Albert C.: *See—*
Graham, Robert O.; Rauenbuehler, John A.; and Snowdon, Albert C., 4,195,212, Cl. 200-243.000.
Societe Anonyme dite: La Telephonie Industrielle et Commerciale - Telic: *See—*
Kraess, Henri; and Bloch, Paul, 4,195,275, Cl. 335-120.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Martin, Ernest N.; and Keirns, Michael L., 4,194,651, Cl. 222-108.000.
Societe Europeene de Propulsion: *See—*
Detalle, Bernard, 4,194,706, Cl. 244-3.230.
Societe Nationale Elf Aquitaine: *See—*
Lalanne, Jean; Nivert, Jean-Pierre; and Tarascou, Daniel, 4,194,454, Cl. 110-238.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Chateau, Georges M.; and Falkner, Chester B., Jr., 4,194,857, Cl. 405-203.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Gouley, Claude A., 4,195,300, Cl. 343-109.000.
Sokolov, Anatoly D.: *See—*
Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., 4,194,996, Cl. 260-17.200.
Soloway, Natalie. Tropical fish training kit. 4,194,620, Cl. 206-223.000.
Somerville Belkin Industries Limited: *See—*
Zimmermann, John, 4,194,439, Cl. 93-36.050.
Sommansson, Peter S. E., to Telefonaktiebolaget L M Ericsson. Telephone push button switch assembly having sequential operated contact structure. 4,195,207, Cl. 200-1.00B.
Sommer, Donald J.: *See—*
Murakami, David; and Sommer, Donald J., 4,195,335, Cl. 363-49.000.
Sommer, John G., Jr., to General Tire & Rubber Company, The. Rubber articles having improved fatigue life. 4,195,143, Cl. 525-354.000.
Song, Won R.: *See—*
Elliott, Robert L.; and Song, Won R., 4,194,984, Cl. 252-51.50A.
Sony Corporation: *See—*
Ohsawa, Mitsuo; and Kawagoe, Hiroshi, 4,194,743, Cl. 274-1.00E.
Southwest Research Institute: *See—*
Benson, Harvey S.; and Wood, Charles D., III, 4,194,574, Cl. 172-430.000.
Sovish, Richard C.; and Moisson, Marc F. L., to N.V. Raychem S.A. Sealing device with external deformable flanges. 4,194,750, Cl. 277-208.000.
Spatle, Wilfried, to Messrs. Leonhard Kurz. Feeding apparatus for a film in a hot press stamping machine. 4,194,944, Cl. 156-540.000.
Spaulding, Tedford H., to Bunker Ramo Corporation. Insulation piercing contacts and connectors. 4,194,802, Cl. 339-97.00P.
Spector, George: *See—*
Ledman, Dale A.; and Spector, George, 4,194,629, Cl. 206-573.000.
Spehrley, Charles W., Jr.; and Walsh, Brian F., to Xerox Corporation. Staple clinching mechanism. 4,194,666, Cl. 227-155.000.
Spencer, Arthur T.: *See—*
Brown, George L.; and Spencer, Arthur T., 4,195,005, Cl. 260-29.6TA.
Brown, George L.; and Spencer, Arthur T., 4,195,006, Cl. 260-29.6TA.
Spencer Wright Industries, Inc.: *See—*
Parsons, Ronald, 4,194,457, Cl. 112-222.000.
Sperry Corporation: *See—*
Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., 4,195,318, Cl. 360-39.000.
Rainwater, Lawrence L., 4,195,270, Cl. 333-21.00A.
Thaxter, James B., 4,195,243, Cl. 310-317.000.
Spiegelberg, Hans, to Salve S.A. Lockable holder for a multiple plaster pack. 4,194,624, Cl. 206-441.000.
Spirig, Ernst. Desoldering wick package and improved bobbin utilized therein. 4,194,705, Cl. 242-137.000.
Spivack, John D., to Ciba-Geigy Corporation. Hindered phenyl phosphites. 4,195,016, Cl. 260-45.85R.

Sporrong, Malte: *See*—
Gransell, Ake; Jansson, Sven A.; and Sporrong, Malte, 4,194,922, Cl. 134-1.000.
Sportscoach Corporation: *See*—
Jennings, Frederick A.; and Bowen, Thomas C., 4,194,373, Cl. 64-14.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of 2-oxabicycloctane derivatives, for augmenting or enhancing the flavor of foodstuffs. 4,195,099, Cl. 426-536.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of 2-oxabicyclooctane derivatives in augmenting or enhancing the flavor of a foodstuff. 4,195,100, Cl. 426-536.000.
Springer, Engelbert: *See*—
Hillmann, Hans; and Springer, Engelbert, 4,195,199, Cl. 174-128.00S.
Spurrier, Harry A. Cooler chest and dispenser structure. 4,194,647, Cl. 221-97.000.
Square D Company: *See*—
Swindler, David L.; and Selby, Donald W., 4,194,378, Cl. 70-363.000.
Stackaruk, Arthur. Stackaruk engine. 4,194,479, Cl. 123-148.00C.
Stadler, Paul: *See*—
Fehr, Theodor; and Stadler, Paul, 4,195,086, Cl. 424-250.000.
Stadler, Peter: *See*—
Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, 4,195,173, Cl. 536-17.00R.
Staff, Bonner W., to General Electric Company. Ultrasonic inspection method. 4,194,400, Cl. 73-623.000.
Stallion Corporation: *See*—
Boley, Robert E., 4,194,393, Cl. 73-151.000.
Standard Oil Company: *See*—
Li, George S.; and Jones, John F., 4,195,135, Cl. 525-69.000.
Stanley Electric Co., Ltd.: *See*—
Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,195,249, Cl. 313-493.000.
Miyazawa, Hideo, 4,195,245, Cl. 313-113.000.
Stanley, Gerald R., to Crown International, Inc. Low-level preamplifier circuit. 4,195,267, Cl. 330-265.000.
Stanley Works, The: *See*—
Cotton, Lawrence M., 4,194,543, Cl. 144-137.000.
Stanton, Robert. Golf putting training device. 4,194,648, Cl. 221-299.000.
Stark, Virgil. Solar distillation apparatus. 4,194,949, Cl. 202-180.000.
Static Systems Corporation: *See*—
Lester, Robert W.; and Hotto, Robert, 4,194,833, Cl. 355-14.0CU.
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, to AGFA-Gevaert, A.G. Marking of interspersed motion-picture scenes and still shots with interrupt-transport markings. 4,194,817, Cl. 352-169.000.
Stauffer Chemical Company: *See*—
Campbell, Ramsey G., 4,194,514, Cl. 131-17.00R.
Steenson, Thomas W.: *See*—
Paton, W. Donald; and Steenson, Thomas W., 4,194,333, Cl. 52-235.000.
Stefek, Jiri: *See*—
Hodr, Miloslav; Holub, Josef; and Stefek, Jiri, 4,194,537, Cl. 139-194.000.
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., to Vsesojuzny Nauchno-Issledovatelsky Institut Myasnoi Promyshlennosti. Method for preparing enzymaytic composition for acceleration of ageing of meat products. 4,195,097, Cl. 426-61.000.
Stella, Joseph A.: *See*—
Ruck, Bernard W.; Stella, Joseph A.; and Bullock, Edward K., 4,194,816, Cl. 352-130.000.
Stemme, Otto; Lermann, Peter; and Fauth, Gunter, to Agfa-Gevaert Aktiengesellschaft. Camera with film-unit drive. 4,194,821, Cl. 354-86.000.
Stemme, Otto: *See*—
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
Stengel, Edgar; and Emde, Friedhelm, to Aeg-Elotherm G.m.b.H. Apparatus for the inductive hardening by quenching of bearing surfaces of a crankshaft. 4,194,728, Cl. 266-125.000.
Stenger, Richard E., to General Electric Company. Double annular combustor configuration. 4,194,358, Cl. 60-39.060.
Stenman, Antero E.: *See*—
Falk, Alfons B.; Stenman, Antero E.; and Wikland, Svante, 4,194,761, Cl. 280-705.000.
Stenzenberger, Volkmar: *See*—
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
Stephenson, Donald K., to Outboard Marine Corporation. Throttling passageway to decrease coast-down time of lawn mower engines. 4,194,485, Cl. 123-198.0DC.
Stevens, James N. Radially compressed rotary shaft sealing device. 4,194,746, Cl. 277-34.300.
Stevenson, John: *See*—
George, Raymond D.; and Stevenson, John, 4,194,918, Cl. 106-80.000.
Stevenson, John L.: *See*—
Faktor, Marc M.; and Stevenson, John L., 4,194,954, Cl. 204-129.300.
Stever, Carole A.; and Stever, Robert L. Bug-bopper. 4,194,690, Cl. 239-57.000.
Stever, Robert L.: *See*—
Stever, Carole A.; and Stever, Robert L., 4,194,690, Cl. 239-57.000.
Stewart, Charles L.: *See*—
Gastrock, Edward A., 4,194,398, Cl. 73-422.0TC.
Stieger, Helmut J. Power take-off arrangements. 4,194,360, Cl. 60-325.000.
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., to AGFA-GEVAERT N.V. Radiographic film cassette. 4,194,625, Cl. 206-455.000.
Stine, Clifford R.; and Wojtecki, Rudolph G., to Eaton Corporation. Composite tubing product. 4,194,536, Cl. 138-149.000.
Stoffregen, Gunter. Door check device. 4,194,264, Cl. 16-52.000.
Stokley, Charles O.; and Erbstoesser, Steven R., to Exxon Production Research Company. Placement apparatus and method for low density ball sealers. 4,194,561, Cl. 166-162.000.
Stone, Clement A., to Merck & Co., Inc. Compositions and methods for treating glaucoma by the topical administration of t-butylamino-3-(4-morpholino-1,2,5-thiadiazol-3-yloxy-2-phopanol hydrogen maleate. 4,195,085, Cl. 424-248.510.
Stone, Robert P.: *See*—
D'Amato, Ralph J.; and Stone, Robert P., 4,195,248, Cl. 313-403.000.
Stormer, Horst L.: *See*—
Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., 4,194,935, Cl. 148-175.000.
Stoufflet, Rene G.; and Yeou, Victor, to Poclain. Hydraulic motor control. 4,194,365, Cl. 60-468.000.
Stout, Edward I.: *See*—
Fanta, George F.; Stout, Edward I.; and Doane, William M., 4,194,998, Cl. 260-17.4GC.
Straitz, John F., III, to Combustion Unlimited Incorporated. Liquid burnpits. 4,194,876, Cl. 431-202.000.
Stratton, Boyd L., to Arvin Industries, Inc. Video recording and playback editing system with displayed cue signals. 4,195,317, Cl. 360-14.000.
Straus, Dorothy L.: *See*—
Wygal, John F.; Schandoney, Geraldine; and Straus, Dorothy L., 4,194,588, Cl. 180-279.000.
Strigle, Ralph F., Jr.: *See*—
Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., 4,195,043, Cl. 261-94.000.
Stritzl, Karl: *See*—
Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, 4,194,758, Cl. 280-605.000.
Strock, Harold B.: *See*—
Kotval, Peshotan S.; and Strock, Harold B., 4,195,067, Cl. 423-348.000.
Strom, Robert E.: *See*—
Swanson, George G.; Strom, Robert E.; and Jansen, Philip, 4,194,300, Cl. 34-217.000.
Stromberg, Thore. Nozzle regulating device. 4,194,526, Cl. 137-498.000.
Strub, Jacques: *See*—
Bertrand, Pierre; Jamet, Michel; Strub, Jacques; and Walter, Eric, 4,195,337, Cl. 364-106.000.
Struckman, Edmund E.; and Larsen, Harold S. Float arm operated valve. 4,194,525, Cl. 137-438.000.
Studebaker, Irving G.; and Hutchins, Ned M., to Occidental Oil Shale, Inc. Staggered array of explosives for fragmented oil shale formation toward a vertical free face. 4,194,789, Cl. 299-2.000.
Studenroth, Karl E. Rotary piston internal combustion engine. 4,194,871, Cl. 418-38.000.
Stuhler, Harold A.: *See*—
Foerster, George S.; and Stuhler, Harold A., 4,194,904, Cl. 75-78.000.
Stumpf, Friedrich: *See*—
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
Stutz, Herbert; and Gehm, Robert, to BASF Aktiengesellschaft. Hard, rigid, non-elastomeric polyurethane, compositions. 4,195,149, Cl. 528-49.000.
Su, Kai C.: *See*—
Deichert, William G.; Su, Kai C.; and Van Buren, Martin F., 4,195,030, Cl. 260-448.20E.
Sudakova, Lidia M.: *See*—
Borodin, Valerian A.; Sudakova, Lidia M.; and Kolobanov, Nikolai I., 4,194,538, Cl. 139-194.000.
Sudo, Yoichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Knee protecting device for occupant of vehicle. 4,194,762, Cl. 280-751.000.
Sugano, Kazuhiko: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.
Suganuma, Hisashi, to Pioneer Electronic Corporation. Temperature compensating circuit for varactor diodes. 4,195,274, Cl. 334-15.000.
Sugasawa, Fukashi, to Nissan Motor Company, Limited. Control system for hydraulic pressure regulating valve in automatic transmission

connected to multi-cylinder I.C. engine with means for operating the engine on selected cylinders of all. 4,194,416, Cl. 74-859.000.

Sugasawa, Fukashi: *See—*
Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, 4,194,417, Cl. 74-866.000.

Sugiyama, Keiichi, to Yamaha Hatsudoki Kabushiki Kaisha. Device for admission of secondary air to internal combustion engine intake. 4,194,477, Cl. 123-124.00R.

Sulzer Brothers Limited: *See—*
Augsburger, Walter, 4,194,468, Cl. 122-406.0ST.

Sumitomo Chemical Company, Limited: *See—*
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-137.000.

Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Air-fuel ratio control system for an internal combustion engine. 4,194,478, Cl. 123-139.0AW.

Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, to Bayer Aktiengesellschaft. Cross-linked plastics based on cyanic acid esters and method of production thereof. 4,195,132, Cl. 521-155.000.

Sunouchi, Akio: *See—*
Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.

Suozzo, Leonard S. Mechanical shock and sway arrestor. 4,194,598, Cl. 188-134.000.

Super Sack Manufacturing Corporation: *See—*
Williamson, Robert R.; and Derby, Norwin C., 4,194,652, Cl. 222-185.000.

Suxov, Gennady I.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.

Suzuki, Kozo: *See—*
Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, 4,195,203, Cl. 179-1.0GD.

Suzuki, Masayuki: *See—*
Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.

Suzuki, Shunichi, to Nippon Electric Co., Ltd. Flip-flop comprising two field effect transistors controllably connected to nodes of the flip-flop and then crosswise to serve as a sense amplifier. 4,195,239, Cl. 307-355.000.

Suzuki, Takatoshi: *See—*
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-137.000.

Suzuki, Tooru, to Tokyo Shibaura Electric Co., Ltd. X-ray photographing apparatus. 4,195,229, Cl. 250-445.00T.

Svensson, Bengt H.; Lindberg, Lars G.; and Hallstedt, Karl G. A., to Aktiebolaget SKF. Device for maintaining a required liquid pressure in a hydrostatic bearing. 4,194,796, Cl. 308-9.000.

Svirklys, Ferdinand M., to Extrados Company Limited. Plant growing unit. 4,194,320, Cl. 47-59.000.

Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, to TMC Corporation. Brake mechanism which can be mounted on a ski. 4,194,758, Cl. 280-605.000.

Svoboda, Josef, to TMC Corporation. Brake mechanism for a ski. 4,194,759, Cl. 280-605.000.

Svoboda, Josef: *See—*
Hofbauer, Rupert; and Svoboda, Josef, 4,194,387, Cl. 73-9.000.

Swain, Samuel J. Combinational fireplace unit. 4,194,489, Cl. 126-127.000.

Swann, Wayne E.: *See—*
Hartdegen, Frank J.; and Swann, Wayne E., 4,195,127, Cl. 435-174.000.

Swanson, George G.; Strom, Robert E.; and Jansen, Philip, to Nabisco, Inc. Apparatus for handling creme filled sandwich cookies. 4,194,300, Cl. 34-217.000.

Swift & Company: *See—*
Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.

Swindler, David L.; and Selby, Donald W., to Square D Company. Combination lock extraction apparatus. 4,194,378, Cl. 70-363.000.

Sylla, Jurgen: *See—*
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.

Symborski, Alex P.; Fulmer, Ray M.; and Thomas, David W., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass filaments. 4,194,896, Cl. 65-3.00R.

Syncro Corporation: *See—*
Carmichael, Thomas F., 4,195,256, Cl. 322-90.000.

Tabayashi, Seiichi, to Toppan Printing Co., Ltd. Consecutive copying and bookbinding method and its apparatus. 4,194,832, Cl. 355-11.000.

Tabibi, Sohrab: *See—*
Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.

Tada, Kanetosi: *See—*
Ataka, Saburo; Inao, Kiyohisa; Tada, Kanetosi; Okamura, Yoshinori; and Kimura, Isamu, 4,195,230, Cl. 250-483.000.

Tadmor, Zehev. Method and apparatus for processing polymeric materials. 4,194,841, Cl. 366-75.000.

Taffurelli, Felice, to Albertini, Sauro. Device for seamless attachment of buttons. 4,194,272, Cl. 24-90.00R.

Takagi, Hiromitsu; Kano, Gota; and Teramoto, Iwao, to Matsushita Electric Industrial Co., Ltd. Selective thermal oxidation of As-containing compound semiconductor regions. 4,194,927, Cl. 148-1.500.

Takagi, Ken-ichi: *See—*
Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, 4,194,900, Cl. 75-0.50C.

Takahashi, Kenji. Answer-spotting electric instrument. 4,194,302, Cl. 35-9.00C.

Takano, Motoharu, to Q.P. Corporation. Apparatus for intermittently transferring containers. 4,194,613, Cl. 198-425.000.

Takeda, Ryuichiro: *See—*
Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, 4,194,946, Cl. 162-156.000.

Takeuchi, Yuzo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.

Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, to Nippon Kayaku Kabushiki Kaisha. 3-[(S)-1'-Phenylethylamino]propylaminobleomycin, non-toxic salt thereof, and method for producing same. 4,195,018, Cl. 260-112.50R.

Tanahashi, Toshio: *See—*
Amano, Masuo; and Tanahashi, Toshio, 4,194,472, Cl. 123-119.00A.

Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, to Kawasaki Jukogyo Kabushiki Kaisha. Ion-nitriding process. 4,194,930, Cl. 148-16.600.

Tanaka, Kenichi, to Kakuichi Co. Ltd. Apparatus for manufacturing synthetic resin hose having a reinforcing member embedded therein. 4,194,942, Cl. 156-433.000.

Tanaka, Makoto: *See—*
Moriya, Yoshiro; Ikai, Kazuhito; and Tanaka, Makoto, 4,194,914, Cl. 106-18.140.

Tani, Tatsuo; Ota, Sakae; and Kono, Masao, to Ricoh Company, Ltd. Original feed apparatus for electrophotographic copying machine. 4,194,837, Cl. 355-75.000.

Tarascou, Daniel: *See—*
Lalanne, Jean; Nivert, Jean-Pierre; and Tarascou, Daniel, 4,194,454, Cl. 110-238.000.

Tarkan, Stuart E.: *See—*
Mal, M. Kumar; and Tarkan, Stuart E., 4,194,910, Cl. 75-236.000.

Tatsumi, Susumu: *See—*
Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,195,260, Cl. 324-204.000.

Taylor, Roger W.: *See—*
Sheard, Dennis R.; and Taylor, Roger W., 4,195,112, Cl. 428-288.000.

Technical Communications Corporation: *See—*
McCalmont, Arnold M., 4,195,202, Cl. 179-1.50S.

Technovation, Inc.: *See—*
Rohrer, George A., 4,195,355, Cl. 365-145.000.

Tecumseh Products Company: *See—*
Morse, Robert L., 4,194,370, Cl. 62-503.000.
Morse, Robert L., 4,194,371, Cl. 62-503.000.

Teepak, Inc.: *See—*
Verellen, Michael; and Thaens, Ghislain, 4,195,054, Cl. 264-558.000.

Tektronix, Inc.: *See—*
Roberts, Ronald W., 4,195,252, Cl. 315-392.000.

Telefonaktiebolaget L M Ericsson: *See—*
Sommansson, Peter S. E., 4,195,207, Cl. 200-1.00B.

Tell, Karl G.; Wall, Arne E.; and Siwersson, Olle L., to AB Scaniainventor. Apparatus for unloading loose particulate solid material. 4,194,615, Cl. 198-502.000.

Tennant Company: *See—*
Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., 4,194,263, Cl. 15-353.000.

Teramoto, Iwao: *See—*
Takagi, Hiromitsu; Kano, Gota; and Teramoto, Iwao, 4,194,927, Cl. 148-1.500.

Terk, Harold S., to Abbott Laboratories. Liquid reagent cartridge cuvette. 4,195,060, Cl. 422-61.000.

Terner, Leslie L.: *See—*
Noakes, Jack E.; and Terner, Leslie L., 4,195,049, Cl. 264-63.000.

Terraillon, Paul. Timer. 4,194,354, Cl. 368-276.000.

Terzian, Berj A. Compact, multi-functional digital time displays. 4,194,352, Cl. 368-239.000.

Texaco Development Corporation: *See—*
Waddill, Harold G., 4,195,153, Cl. 528-94.000.

Texaco Inc.: *See—*
Bousaid, Issam S.; Hoyt, Donald L.; and Korstad, Ralph J., 4,194,562, Cl. 166-245.000.
Chou, Kechia J., 4,194,982, Cl. 252-47.500.
Hammond, Kenneth G.; and Schlicht, Raymond C., 4,194,981, Cl. 252-46.700.
Kalfoglou, George, 4,194,565, Cl. 166-275.000.
Schievelbein, Vernon H., 4,194,563, Cl. 166-273.000.
Schievelbein, Vernon H., 4,194,564, Cl. 166-274.000.

Texas Instruments Incorporated: *See—*
Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, 4,195,357, Cl. 365-210.000.
Reid, Lee R.; and Ratliff, Charles R., 4,195,259, Cl. 324-158.00P.

Textron Inc.: *See*—
Edson, Sydney, 4,194,637, Cl. 211-96.000.
Thaens, Ghislain: *See*—
Verellen, Michael; and Thaens, Ghislain, 4,195,054, Cl. 264-558.000.
Thames, Jimmy, Grave digging apparatus, 4,194,311, Cl. 37-192.00A.
Thaxter, James B., to Sperry Corporation. Piezoelectric wafer mover. 4,195,243, Cl. 310-317.000.
Thermacore, Inc.: *See*—
Eastman, George Y., 4,194,559, Cl. 165-105.000.
Thermo Electron Corporation: *See*—
Rounbehler, David P.; and Fine, David H., 4,194,884, Cl. 23-232.00R.
Thery, Jean P.; Alban, Claude M.; and Jordi, Albert P., to Compagnie Francaise des Petroles, S.A. Fire extinguishing apparatus for large oil storage reservoirs. 4,194,572, Cl. 169-66.000.
Thien, Gerhard: *See*—
Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,194,484, Cl. 123-195.00C.
Thomas, David W.: *See*—
Symborski, Alex P.; Fulmer, Ray M.; and Thomas, David W., 4,194,896, Cl. 65-3.00R.
Thomas Regout N.V.: *See*—
Offermans, Hubert G., 4,194,793, Cl. 308-3.800.
Thomasse, Andre: *See*—
Bouteille, Daniel; Thomasse, Andre; and Petrimaux, Eric, 4,194,533, Cl. 137-624.150.
Thomi, Michel; Groothuis, Michel; and Meylan, Serge, to Compagnie des Montres Longines Francillon SA. Analog display calendar watch. 4,194,353, Cl. 368-38.000.
Thompson, Gerald L., to Eli Lilly and Company. 4-Desacetoxy-4α-hydroxyvinblastine and related compounds. 4,195,022, Cl. 260-244.400.
Thompson, Joseph F.: *See*—
Rhine, Samuel A.; Thompson, Joseph F.; and Palmer, Catherine G., 4,194,513, Cl. 128-750.000.
Thompson, Richard L., to General Electric Company. Luminaire hoist safety device with automatic brake means adjacent top cable guide. 4,195,332, Cl. 362-391.000.
Thompson, Thomas K., to Owens-Corning Fiberglas Corporation. Fluid flow method and apparatus used in manufacture of glass fibers. 4,194,895, Cl. 65-2.000.
Thompson, Woodrow F. Adjustable golf putter. 4,194,739, Cl. 273-79.000.
Thomson-CSF: *See*—
Gazard, Maryse; and Dubois, Jean-Claude, 4,195,108, Cl. 428-195.000.
Thomson, James R.: *See*—
Layden, Lawrence M.; and Thomson, James R., 4,194,727, Cl. 266-58.000.
Thor, Gary. Shotgun ammunition container. 4,194,657, Cl. 224-252.000.
Thorneburg Hosiery Co., Inc.: *See*—
Thorneburg, James L., 4,194,249, Cl. 2-239.000.
Thorneburg, James L., to Thorneburg Hosiery Co., Inc. Jogging and running athletic sock. 4,194,249, Cl. 2-239.000.
Thuillier, Germaine, nee Nachmias: *See*—
Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., 4,195,093, Cl. 424-275.000.
Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, to SKF Kugellagerfabriken GmbH. Skateboard. 4,194,752, Cl. 280-11.280.
Tillotson, Richard. Swimmer's wallet. 4,194,655, Cl. 224-191.000.
Timm, Walter C., to GAF Corporation. Self-adhesive plastic tile. 4,195,107, Cl. 428-40.000.
Timmins, Armand P.: *See*—
Boon, Bruce T. E.; and Timmins, Armand P., 4,194,859, Cl. 406-172.000.
TMC Corporation: *See*—
Hofbauer, Rupert; and Svoboda, Josef, 4,194,387, Cl. 73-9.000.
Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, 4,194,758, Cl. 280-605.000.
Svoboda, Josef, 4,194,759, Cl. 280-605.000.
Toh, Tagao: *See*—
Iwaoka, Kazuo; Toh, Tagao; and Fukada, Minoru, 4,195,063, Cl. 422-180.000.
Toko, Inc.: *See*—
Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, 4,195,203, Cl. 179-1.0GD.
Toko, Yoshiaki: *See*—
Yamauchi, Noriyuki; Toko, Yoshiaki; and Ehara, Takao, 4,194,864, Cl. 414-283.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Shiode, Tsuyoshi, 4,194,835, Cl. 355-67.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Suzuki, Tooru, 4,195,229, Cl. 250-445.00T.
Tomioka, Shinji; and Mori, Yasuki, to Abbott Laboratories. Derivatives of an antibiotic XK-62-2 and process for the production thereof. 4,195,171, Cl. 536-17.00R.
Tomy Kogyo Co., Inc.: *See*—
Watanabe, Saburo, 4,194,318, Cl. 46-202.000.
Tone, Junsuke: *See*—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.
Toppan Printing Co., Ltd.: *See*—
Tabayashi, Seiichi, 4,194,832, Cl. 355-11.000.
Tornay, Edmund G., to Energy Transportation Group, Inc. Slam prevention in liquid pumping. 4,194,870, Cl. 417-53.000.
Torrez, Kay A. Floor-supported cushion assembly and method of making same. 4,194,254, Cl. 5-420.000.
Tournier, Herve; and Groult, Alain, to Union Generale de Savonnerie. Powdered or flaked washing compositions adapted to automatic laundry machines. 4,194,986, Cl. 252-102.000.
Towmotor Corporation: *See*—
Callaghan, William I.; Dawson, Dennis E.; Gubser, William D.; and Vero, Joseph A., 4,194,720, Cl. 251-77.000.
Toyo Kogyo Co., Ltd.: *See*—
Itoh, Takahisa, 4,194,782, Cl. 296-65.00R.
Maeda, Tatsuo, 4,194,377, Cl. 70-360.000.
Satow, Haruhiko; Ueda, Tadakazu; and Ogasawara, Ikuo, 4,194,486, Cl. 123-210.000.
Toyo Kohan Co., Ltd.: *See*—
Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, 4,194,900, Cl. 75-0.50C.
Toyo Soda Manufacturing Company, Ltd.: *See*—
Hayashi, Takao; Sakanaka, Yasuhiro; and Shimizu, Akihiko, 4,194,999, Cl. 260-17.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Amano, Masuo; and Tanahashi, Toshio, 4,194,472, Cl. 123-119.00A.
Saiki, Junichi, 4,194,475, Cl. 123-119.00A.
Satoh, Akira; and Ishizaka, Teisuke, 4,194,414, Cl. 74-674.000.
Shiomi, Masanao; Yokoya, Yuuji; and Harata, Motowo, 4,194,760, Cl. 280-661.000.
Sudo, Yoichi, 4,194,762, Cl. 280-751.000.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.
Watanabe, Makio; Aoyama, Kaneyosi; and Shinohara, Makoto, 4,194,556, Cl. 165-51.000.
Tracy, Daniel J.; Palmer, John P.; and O'Brien, Daniel J., to United States of America, Air Force. Remotely piloted vehicle. 4,194,708, Cl. 244-15.000.
Trafton, Ronald H. Construction components, assemblies thereof, and methods of making and using same. 4,194,338, Cl. 52-721.000.
Tremblay, Gerald J. Solar heating apparatus. 4,194,492, Cl. 126-425.000.
Tretter, Larry L.: *See*—
Christopher, Todd J.; and Tretter, Larry L., 4,195,309, Cl. 358-31.000.
Trojahn, Hans-Georg: *See*—
Schonwald, Siegfried; Breyer, Eberhard; and Trojahn, Hans-Georg, 4,194,527, Cl. 137-543.000.
Trombley, Wayne E., to Dow Corning Corporation. Semi-scleral contact lens. 4,194,815, Cl. 351-160.00R.
Troutman, Gary L., to Honeywell, Inc. Signal mixer circuit. 4,195,204, Cl. 370-84.000.
Truth Incorporated: *See*—
Natzel, Jerome W., 4,194,266, Cl. 16-99.000.
Trutzschler GmbH & Co. KG: *See*—
Reiche, Werner; and Trutzschler, Hans, 4,194,269, Cl. 19-81.000.
Trutzschler, Hans: *See*—
Reiche, Werner; and Trutzschler, Hans, 4,194,269, Cl. 19-81.000.
TRW, Inc.: *See*—
Baichtal, James R., 4,195,206, Cl. 370-14.000.
Tsai, Min H., to Unitek Corporation. Gold alloys for fusion to porcelain. 4,194,907, Cl. 75-134.00N.
Tsang, Won-Tien: *See*—
Logan, Ralph A.; and Tsang, Won-Tien, 4,194,933, Cl. 148-171.000.
Tsaur, Shyh-Chang: *See*—
Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, 4,195,357, Cl. 365-210.000.
Tschudin, Arlow H. Paper towel dispenser. 4,194,658, Cl. 225-65.000.
Tsuchiya, Yoshikazu: *See*—
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.
Tsuei, Chang-Ling, to Price-Pfister Brass Mfg. Co. Bistable trip overflow lever. 4,194,252, Cl. 4-199.000.
Tsukamoto, Takuzo; Sakamoto, Tamotsu; and Okamoto, Yoshikazu, to Fuji Xerox Co., Ltd. Magnetic brush developer device. 4,194,465, Cl. 118-658.000.
Tu, George K.; Mager, George E.; Baker, Lamar T.; and Markle, Robert E., to Xerox Corporation. Split programmable logic array. 4,195,352, Cl. 364-900.000.
Turk, Abraham A.: *See*—
Simuro, Ernest G.; Turk, Abraham A.; and Turk, Nathan M., 4,194,295, Cl. 33-458.000.
Turk, Nathan M.: *See*—
Simuro, Ernest G.; Turk, Abraham A.; and Turk, Nathan M., 4,194,295, Cl. 33-458.000.
Turner, Robert K.: *See*—
McChesney, Richard M.; and Turner, Robert K., 4,194,483, Cl. 123-187.50R.
Turpin, Edward T., to SCM Corporation. Aqueous polyester coatings. 4,195,102, Cl. 427-27.000.
Tutco, Inc.: *See*—
Parkinson, Truman D., 4,194,261, Cl. 15-250.070.
Tyner, Frederick C. Energy absorbing basketball goal/backboard unit. 4,194,734, Cl. 273-1.50R.

Udvardi-Lakos, Janos, to Siemens Aktiengesellschaft. Inverter starting system. 4,195,233, Cl. 307-66.000.

Ueda, Tadakazu: *See*—
Satow, Haruhiko; Ueda, Tadakazu; and Ogasawara, Ikuo. 4,194,486, Cl. 123-210.000.

Ueltz, Herbert F. G.; Dashineau, Melvin A.; and Pino, James J., to U.S. Industries, Inc. Fused alumina-zirconia abrasive material formed by an immersion process. 4,194,887, Cl. 51-309.000.

Ullven, Adolf G. Person-lifting device. 4,194,253, Cl. 5-84.000.

Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 3',4'-Episulfido kanamycin B compounds. 4,195,170, Cl. 536-10.000.

Umezawa, Hamao: *See*—
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao. 4,195,018, Cl. 260-112.50R.

Umezawa, Sumio: *See*—
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro. 4,195,170, Cl. 536-10.000.

Union Carbide Corporation: *See*—
Carman, Richard W.; and Doherty, Edward J., III. 4,195,227, Cl. 250-505.000.
Dunleavy, Raymond A.; and Papa, Anthony J., 4,195,151, Cl. 528-163.000.
Earls, David E.; and Long, Gary N., 4,194,891, Cl. 55-26.000.
Elbert, Raymond J.; and Sara, Raymond V., 4,194,673, Cl. 228-219.000.
Jones, Russell L.; Keller, George E., II; and Wells, Rex C., 4,194,892, Cl. 55-58.000.
Knopf, Robert J.; and Hoy, Kenneth L., 4,195,167, Cl. 528-408.000.
Kotval, Peshotan S.; and Strock, Harold B., 4,195,067, Cl. 423-348.000.
Peterson, Gordon E., 4,195,121, Cl. 429-127.000.
Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,195,160, Cl. 528-297.000.

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Uniroyal, Inc.: *See*—
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U.S. Armament Corporation: *See*—
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United States Gypsum Company: *See*—
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Long, William J., 4,195,109, Cl. 428-198.000.

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Barry, James D., 4,194,811, Cl. 350-255.000.
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.
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Figge, Irving E.; and Dean, Edward H., 4,194,938, Cl. 156-212.000.
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Markus, Harold; and McCaughey, Joseph M., 4,194,431, Cl. 89-36.00A.
Menke, Joseph T., 4,194,929, Cl. 148-6.15R.
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Lemcoe, Meyer M.; and Pattee, Harry E. Attaching of strain gages to substrates. 4,195,279, Cl. 338-2.000.
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Hillery, Herbert V., 4,195,361, Cl. 367-149.000.
Kuck, John H., 4,195,295, Cl. 343-7.0PF.
Moran, Steven E., 4,195,221, Cl. 455-609.000.
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Reid, John D., 4,195,294, Cl. 343-7.0PF.

U.S. Philips Corporation: *See*—
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De Grijs, Johan C., 4,194,493, Cl. 126-442.000.
Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., 4,195,253, Cl. 316-1.000.
Fouilloy, Jean-Pierre, 4,195,222, Cl. 250-213.0VT.
Klomp, Franciscus M.; and Overmars, Marinus, 4,194,623, Cl. 206-418.000.
Schiek, Burkhard; and Kohler, Jurgen, 4,195,271, Cl. 333-161.000.
Williams, John C., 4,195,296, Cl. 343-8.000.

United Technologies Corporation: *See*—
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Corcokios, Nicholas, 4,194,869, Cl. 415-216.000.

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UOP Inc.: *See*—
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Flagg, John F.; and Antos, George J., 4,194,991, Cl. 252-441.000.
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Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., 4,194,996, Cl. 260-17.200.
Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., 4,195,019, Cl. 260-17.200.

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USM Corporation: *See*—
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Uto, Yoshimitsu; Omae, Takashi; Fukaya, Yasuhiro; and Yoshida, Yasuyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for the diffusion welding of copper and stainless steel. 4,194,672, Cl. 228-194.000.

Vac-O-Cast, Inc.: *See*—
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Vali, Enn, to Westinghouse Canada Limited. Variable response notch filter for machine resonance elimination in a servo control system. 4,195,265, Cl. 328-167.000.

Valks, Robert K.; and Botham, Brian W., to USM Corporation. Leather press. 4,194,376, Cl. 69-48.000.

Vallhonrat, Orlando D. Buccal Hygienic instrument. 4,194,290, Cl. 433-141.000.

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Van Acker, Eduard M. A. A. J.; Kooijmans, Petrus G.; and de Heer, Aart, to Shell Oil Company. Process for preparing water-dispersible resins. 4,195,004, Cl. 260-29.6TA.

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VanEtten, James P., to International Telephone and Telegraph Corporation. Loran-C system monitor circuit. 4,195,299, Cl. 343-103.000.
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Walker, Leon P.; and Gabaldon, Manuel. Valve lifting attachment for fork lift. 4,194,868, Cl. 414-607.000.
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Whalen, Bernard F., to Yetter Manufacturing Company. Multiple rotary hoe and support arms. 4,194,575, Cl. 172-551.000.
Wheeler, Ian R.; and Robertson, George H., to Ciba-Geigy Corporation. Pigment compositions and process for dust free pigment beads. 4,194,921, Cl. 106-309.000.
Whirlpool Corporation: *See*—
Marcade, Roque D., 4,195,232, Cl. 307-130.000.
Whitcher, Kayleen S.; and Benner, Mary Jo, to Aquaphase Laboratories, Inc. Chemical test kit. 4,195,059, Cl. 422-61.000.
White, Eugene M. Mounting unit for free arm sewing machine. 4,194,799, Cl. 312-21.000.
White, Roy W.: *See*—
Walter, Henry J.; and White, Roy W., 4,195,218, Cl. 219-370.000.
Whitehouse, Ben, Jr. Water slide system. 4,194,733, Cl. 272-56.50R.
Whitesitt, Celia A.: *See*—
Herron, David K.; and Whitesitt, Celia A., 4,195,021, Cl. 260-239.00A.
Wiberg, Anna-Britta, legal representative: *See*—
Wiberg, Karl V., deceased; and Wiberg, Anna-Britta, legal representative, 4,194,299, Cl. 34-124.000.
Wiberg, Karl V., deceased; and Wiberg, Anna-Britta, legal representative, to SCA Development Aktiebolag. Condensate discharging device. 4,194,299, Cl. 34-124.000.
Wicke, Charles H., to ACF Industries, Incorporated. Valve chamber flushing system. 4,194,524, Cl. 137-240.000.
Wiechers, Willem: *See*—
Wright, Donald C.; Marsh, Brian; and Wiechers, Willem, 4,194,898, Cl. 65-114.000.
Wikland, Svante: *See*—
Falk, Alfons B.; Stenman, Antero E.; and Wikland, Svante, 4,194,761, Cl. 280-705.000.
Wilkalis, John E.: *See*—
Pieters, Wim J. M.; Gates, William E.; Carlson, Emery J.; and Wilkalis, John E., 4,194,990, Cl. 252-441.000.
Wilkerson, Larry A.: *See*—
Barecki, Chester J.; and Wilkerson, Larry A., 4,194,716, Cl. 248-575.000.
Williams, David A. Tubing notcher. 4,194,422, Cl. 83-581.000.
Williams, Donald F.; and Phy, Charles L. Method and apparatus for forming paper boxes and the like. 4,194,441, Cl. 93-51.0HW.
Williams, George J.; and Boyer, Robert C., to Ecolaire Incorporated. Method for constructing a steam condenser. 4,19[illegible]571, Cl. 228-183.000.
Williams, John C., to U.S. Philips Corporation. Microwave circulator. 4,195,296, Cl. 343-8.000.
Williams, Ralph P.: *See*—
Drake, Charles A.; and Williams, Ralph P., 4,195,155, Cl. 528-121.000.
Williams, Ross S. Attachment for fishing lines and tackle. 4,194,273, Cl. 24-222.000.
Williams, Roy E., to Erco Industries Limited. Electrode spacer element. 4,194,961, Cl. 204-286.000.
Williamsen, Leland C., to Williamsen Truck Equipment Corporation. Dump body with inside gate. 4,194,787, Cl. 298-23.00M.
Williamsen Truck Equipment Corporation: *See*—
Williamsen, Leland C., 4,194,787, Cl. 298-23.00M.
Williamson, Keith H.: *See*—
Richardson, Edward G.; and Williamson, Keith H., 4,195,325, Cl. 361-56.000.
Williamson, Robert R.; and Derby, Norwin C., to Super Sack Manufacturing Corporation. Collapsible receptacle for flowable materials. 4,194,652, Cl. 222-185.000.
Wilson, E. Robert. Wheel balancing tool. 4,194,399, Cl. 73-486.000.
Wilson, Richard A. Batting stance and stride practice apparatus. 4,194,735, Cl. 273-26.00R.
Winkler, Friedrich: *See*—
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
Winkler, Robert J.: *See*—
Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., 4,194,312, Cl. 38-102.500.
Winkler, Timothy K.: *See*—
Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., 4,194,312, Cl. 38-102.500.
Winton, Leroy. Flexible sewer line support. 4,194,711, Cl. 248-49.000.
Wirth, Hermann O.: *See*—
Otto, Eberhard; Wehner, Wolfgang; and Wirth, Hermann O., 4,195,029, Cl. 260-429.700.
Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,195,027, Cl. 260-397.200.
King, Ray J., 4,195,262, Cl. 455-67.000.
Wittnebel, Bruce: *See*—
Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, 4,194,911, Cl. 430-357.000.
Wojcik, Tadeusz P. Drawing instrument. 4,194,292, Cl. 33-30.00C.
Wojtecki, Rudolph G.: *See*—
Stine, Clifford R.; and Wojtecki, Rudolph G., 4,194,536, Cl. 138-149.000.
Wolcott, Lyle A., to United States of America, Army. Loader and recoil simulation trainer for artillery crews. 4,194,304, Cl. 35-25.000.
Wood, Charles D., III: *See*—
Benson, Harvey S.; and Wood, Charles D., III, 4,194,574, Cl. 172-430.000.
Wood, Frederick J., Jr.: *See*—
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,194,852, Cl. 403-299.000.
Wood, Tony J., to Ford Motor Company. Capacitive liquid level sensor. 4,194,395, Cl. 73-304.00C.
Woodhouse, Ronald; and Russell, Walter W. Pumping apparatus. 4,194,893, Cl. 55-168.000.
Woog, Philippe-Guy E., to Les Produits Associes LPA SA. Diagnostic lamp, particularly for checking teeth. 4,195,329, Cl. 362-120.000.
Wooley, Donald W. Garment nail alignment block. 4,194,546, Cl. 145-46.000.

Woolf, Cyril, deceased: *See—*
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased, 4,195,105, Cl. 427-386.000.

Woolf, Helga, executrix: *See—*
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased, 4,195,105, Cl. 427-386.000.

Word, William F., III: *See—*
Magil, Paul; and Word, William F., III, 4,195,290, Cl. 340-568.000.

Workman, Erwin F., Jr., to Abbott Laboratories. Stabilized platelet factor 4 immunoassay standards. 4,195,072, Cl. 424-1.000.

Wright, Andrew C. W., to Dzus Fastener Co., Inc. Quick release fasteners. 4,194,429, Cl. 85-5.00P.

Wright, Donald C.; Marsh, Brian; and Wiechers, Willem, to Pilkington Brothers Limited. Method and apparatus for treatment of articles in a fluidized bed. 4,194,898, Cl. 65-114.000.

Wygal, John F.; Schandoney, Geraldine; and Straus, Dorothy L. Motor vehicle fire prevention device. 4,194,588, Cl. 180-279.000.

Wysocki, Lawrence, to Champion International Corporation. Carton with pour spout made from the carton material. 4,194,677, Cl. 229-17.00R.

Wysocki, Lawrence S.: *See—*
Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,680, Cl. 229-43.000.
Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,681, Cl. 229-43.000.

Xerox Corporation: *See—*
Leicht, John R., 4,195,277, Cl. 335-229.000.
Spehrley, Charles W., Jr.; and Walsh, Brian F., 4,194,666, Cl. 227-155.000.
Tu, George K.; Mager, George E.; Baker, Lamar T.; and Markle, Robert E., 4,195,352, Cl. 364-900.000.

Yabuhara, Tadao: *See—*
Kobayashi, Masahiro; and Yabuhara, Tadao, 4,195,007, Cl. 260-29.6HN.

Yamaguchi, Toshio, to Diesel Kiki Company, Ltd. Electro-magnetic spring-wound clutch. 4,194,607, Cl. 192-84.00T.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Endo, Yoshinori, 4,194,474, Cl. 123-119.00A.
Sugiyama, Keiichi, 4,194,477, Cl. 123-124.00R.

Yamamori, Eiji: *See—*
Arai, Akihiro; and Yamamori, Eiji, 4,194,824, Cl. 354-173.000.

Yamamori, Takahiro: *See—*
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.

Yamamoto, Tamotsu, to Ikegai Tekko Kabushiki Kaisha. Automatic measuring and tool position compensating system for a numerically controlled machine tool. 4,195,250, Cl. 318-561.000.

Yamamoto, Tsutomu: *See—*
Fukui, Saburo; Yamamoto, Tsutomu; and Iida, Takamitsu, 4,195,129, Cl. 435-182.000.

Yamamuro, Sigeaki: *See—*
Usui, Keizaburo; Hayama, Isao; Hamada, Hideo; and Yamamuro, Sigeaki, 4,194,608, Cl. 192-0.092.

Yamanari, Koichiro: *See—*
Agui, Wataru; Higosaki, Nobuyuki; Yamanari, Koichiro; Furukawa, Toshio; and Kuyama, Hiroshi, 4,195,028, Cl. 260-42.430.

Yamauchi, Noriyuki; Toko, Yoshiaki; and Ehara, Takao, to Mitsubishi Jukogyo Kabushiki Kaisha. Three-dimensional automatic warehouse equipment. 4,194,864, Cl. 414-283.000.

Yamazaki, Isamu, to Agency of Industrial Science and Technology, The President of the. Computer system with a configuration monitor. 4,195,344, Cl. 364-200.000.

Yasuda, Mieji, to Junzo Ozaki. Apparatus for indicating the level of a fluid. 4,194,397, Cl. 73-314.000.

Yasuda, Shuntaro: *See—*
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,195,170, Cl. 536-10.000.

Yates, Donald B., to Pullman Incorporated. Dead lever anchoring means for railway car brake rigging. 4,194,595, Cl. 188-52.000.

Yazawa, Chihiro: *See—*
Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, 4,195,037, Cl. 260-575.000.

Yellin, Kathleen F. Combination body rest and totebag. 4,194,601, Cl. 190-2.000.

Yen, Yao T., to Intel Corporation. Logic analyzer for integrated circuits, microcomputers, and the like. 4,195,258, Cl. 324-73.0AT.

Yeou, Victor: *See—*
Stoufflet, Rene G.; and Yeou, Victor, 4,194,365, Cl. 60-468.000.

Yetter Manufacturing Company: *See—*
Whalen, Bernard F., 4,194,575, Cl. 172-551.000.

Yokoya, Yuuji: *See—*
Shiomi, Masanao; Yokoya, Yuuji; and Harata, Motowo, 4,194,760, Cl. 280-661.000.

Yonezawa, Noboru: *See—*
Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.

Yoshida, Mitunari: *See—*
Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,195,249, Cl. 313-493.000.

Yoshida, Susumu; and Kimura, Kiyomitu, to Kabushiki Kaisha Meidensha. Testing apparatus for a circuit assembly. 4,195,257, Cl. 324-73.00R.

Yoshida, Yasuyuki: *See—*
Uto, Yoshimitsu; Omae, Takashi; Fukaya, Yasuhiro; and Yoshida, Yasuyuki, 4,194,672, Cl. 228-194.000.

Yoshikawa, Yoshiro: *See—*
Ohsawa, Eiji; and Yoshikawa, Yoshiro, 4,194,396, Cl. 73-311.000.

Yoshioka, Osamu: *See—*
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,195,018, Cl. 260-112.50R.

Yotsutani, Akio: *See—*
Masaki, Masaru; and Yotsutani, Akio, 4,195,263, Cl. 455-343.000.

Young, John E. G., to General Signal Corporation. Fluid horsepower control system. 4,194,363, Cl. 60-445.000.

Youngblood, John W. Tow bar for vehicles. 4,194,755, Cl. 280-402.000.

Yu, Ho Y.: *See—*
Blaske, Theodore A.; and Yu, Ho Y., 4,194,934, Cl. 148-174.000.

Yuen, Raymond C., to Burroughs Corporation. Decoder for a prom. 4,195,358, Cl. 365-230.000.

Zabner, Adolf; and Bellemore, Norman I., to Nyman Mfg. Co. Container cover construction. 4,194,645, Cl. 220-306.000.

Zado, Frank M., to Western Electric Co. Soldering flux. 4,194,931, Cl. 148-25.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,195,170, Cl. 536-10.000.

Zalles, Robert I. Liquid purifying apparatus. 4,194,950, Cl. 202-185.00R.

Zanner, Johann: *See—*
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.

Zarkov, Sviataslov, to Motorola, Inc. Crystal oscillator including adjustable auto transformer for neutralizing crystal capacitance. 4,195,268, Cl. 331-116.00R.

Zehner, Lee R.: *See—*
Kesling, Haven S., Jr.; and Zehner, Lee R., 4,195,184, Cl. 560-207.000.

Zeiringer, Rudolf: *See—*
Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, 4,194,401, Cl. 73-730.000.

Zelacolor Systems Establishment: *See—*
Guillaume, Emile A. H., 4,194,834, Cl. 355-67.000.

Zellweger, Jurg; and Hurlemann, Ernst, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Breechblock for an automatic firing weapon. 4,194,433, Cl. 89-190.000.

Zenith Radio Corporation: *See—*
Pytlarz, Charles P.; and Rost, Richard L., 4,195,315, Cl. 358-248.000.

Zerillo, Samuel D., to Centronics Data Computer Corp. Dot matrix printing device employing a novel image transfer technique to print on single or multiple ply print receiving materials. 4,194,846, Cl. 400-124.000.

Zielinski, Jan: *See—*
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Zimmerman, Morris: *See—*
Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, 4,195,023, Cl. 548-209.000.

Zimmermann, John, to Somerville Belkin Industries Limited. Method of making collapsible paperboard cup. 4,194,439, Cl. 93-36.050.

Zimmermann, Robert A. Coating system. 4,195,009, Cl. 260-31.20N.

Zimmermann, Waldemar, to Friedr. Fingscheidt GmbH. Door holder. 4,194,265, Cl. 16-82.000.

Zingl, Hans: *See—*
Mitchhart, Ray M.; and Zingl, Hans, 4,194,419, Cl. 81-57.330.

Zuech, Ernest A., to Phillips Petroleum Company. Rhodium hydroformylation catalyst. 4,195,042, Cl. 260-604.0HF.

Zufich, Anthony C. Backpack and frame apparatus. 4,194,656, Cl. 224-211.000.

Zusman, Bertram. Pedestal house with cantilevered cross truss construction. 4,194,326, Cl. 52-73.000.

Zweekly, Raymond T., to Valeron Corporation, The. Indexable insert drill. 4,194,862, Cl. 408-224.000.

Zwingman, Robert L., to Burroughs Corporation. Method and apparatus for measuring the stripe width and collapse field of magnetic materials. 4,195,261, Cl. 324-210.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MARCH, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., to Rohm and Haas Company. Arthropodicidal and nematocidal phosphoramidates. Re. 30,240, Cl. 424-211.000.

Born, Billy L., to Stoelting Brothers Company. Wing type agitator. Re. 30,237, Cl. 366-261.000.

Conway, Walter D.: *See*—
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., Re. 30,241, Cl. 560-73.000.

Eisenstein, Reuben: *See*—
Kuettner, Klaus E.; Eisenstein, Reuben; and Sorgente, Nino, Re. 30,239, Cl. 424-95.000.

Kilbourn, Edward E.: *See*—
Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.

Kuettner, Klaus E.; Eisenstein, Reuben; and Sorgente, Nino. Cell proliferation and tissue invasion inhibitor. Re. 30,239, Cl. 424-95.000.

Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., to Sterling Drug Inc. Esters of 3-(hydroxy or hydroxymethyl)-4-hydroxyphenyl aminomethyl ketones. Re. 30,241, Cl. 560-73.000.

O'Mara, James H.: *See*—
Specht, Edward H.; and O'Mara, James H., Re. 30,238, Cl. 44-62.000.

Rohm and Haas Company: *See*—
Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.
Specht, Edward H.; and O'Mara, James H., Re. 30,238, Cl. 44-62.000.

Sorgente, Nino: *See*—
Kuettner, Klaus E.; Eisenstein, Reuben; and Sorgente, Nino, Re. 30,239, Cl. 424-95.000.

Specht, Edward H.; and O'Mara, James H., to Rohm and Haas Company. Additives to improve the flow of heavy fuels and crude oils. Re. 30,238, Cl. 44-62.000.

Sterling Drug Inc.: *See*—
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., Re. 30,241, Cl. 560-73.000.

Stoelting Brothers Company: *See*—
Born, Billy L., Re. 30,237, Cl. 366-261.000.

Ting, Hui-Tzeng. Clean spark ignition internal combustion engine. Re. 30,236, Cl. 123-32.0SP.

Tullar, Benjamin F.: *See*—
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., Re. 30,241, Cl. 560-73.000.

Weiler, Ernest D.: *See*—
Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.

Weir, William D.: *See*—
Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.

LIST OF PLANT PATENTEES

F. Harmon Saville, Nor'East Miniature Roses: *See*—
Schwartz, Ernest, deceased, 4,513, Cl. 8.000.

Longoria, Gilbert R. Plant of the Araceae family. 4,514, 3-25-80, Cl. 88.000.

Schwartz, Ernest, deceased (by Schwartz, Hazel E., executrix), to F. Harmon Saville, Nor'East Miniature Roses. Rose plant. 4,513, 3-25-80, Cl. 8.000.

Schwartz, Hazel E., executrix: *See*—
Schwartz, Ernest, deceased, 4,513, Cl. 8.000.

LIST OF DESIGN PATENTEES

Aamoth, Gerald R.: *See*—
McKinsey, Kevin P.; and Aamoth, Gerald R., 254,544, Cl. D13-12.000.

Abelson, Mildred. Double ring. 254,537, 3-25-80, Cl. D11-34.000.

Airway Industries, Inc.: *See*—
Davis, Michael, 254,525, Cl. D3-71.000.

Alley, Carl H.; and Alley, Michael B. Rocking toy. 254,561, 3-25-80, Cl. D21-68.000.

Alley, Michael B.: *See*—
Alley, Carl H.; and Alley, Michael B., 254,561, Cl. D21-68.000.

Amirault, Gerald A. Vision shield for a student typist or the like. 254,520, 3-25-80, Cl. D2-234.000.

Armstrong, Douglas. Straw dispenser. 254,530, 3-25-80, Cl. D7-75.000.

Arnoff, Philip J., to Transco Plastics Corporation. Combined cutting board and colander. 254,529, 3-25-80, Cl. D7-46.000.

Atari, Inc.: *See*—
McKinsey, Kevin P.; and Aamoth, Gerald R., 254,544, Cl. D13-12.000.

Bangor Punta Operations, Inc.: *See*—
Moreton, John, 254,522, Cl. D2-427.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald M.; Stokes, Rembert R.; and Sylvester, Gordon E., 254,554, Cl. D18-12.000.

Berman, James S.; and Stegmaier, Sigurd, to Citibank, N.A. Customer activated terminal enclosure. 254,546, 3-25-80, Cl. D14-42.000.

Biosig Inc.: *See*—
Moffat, James G.; and Lekhtman, Gregory, 254,569, Cl. D24-17.000.

Brown, Rohn A. Fan. 254,565, 3-25-80, Cl. D23-155.000.

Chmela, John F. Dart. 254,559, 3-25-80, Cl. D21-49.000.

Circuit Assembly Corp.: *See*—
Thomas, Philip J.; Lang, Roger D.; and McAllister, John A., 254,553, Cl. D15-123.000.

CITC Industries, Inc.: *See*—
Cohen, William J., 254,524, Cl. D3-30.000.

Citibank, N.A.: *See*—
Berman, James S.; and Stegmaier, Sigurd, 254,546, Cl. D14-42.000.

Cohen, William J., to CITC Industries, Inc. Carrying carton for shoes or the like. 254,524, 3-25-80, Cl. D3-30.000.

Comind S.p.A.: *See*—
Margiaria, Giorgio; and Gay, Francesco, 254,543, Cl. D12-169.000.

Cummins, Kevin T., to Kemtron Operations Pty. Ltd. Portable fan housing. 254,566, 3-25-80, Cl. D23-155.000.

Davis, Michael, to Airway Industries, Inc. Luggage case. 254,525, 3-25-80, Cl. D3-71.000.

Davis, Wesley B.; and Dierker, Jeffrey A., to F. W. Bell, Inc. Gun for determining current or power in an electrical conductor. 254,536, 3-25-80, Cl. D10-79.000.

Dierker, Jeffrey A.: *See*—
Davis, Wesley B.; and Dierker, Jeffrey A., 254,536, Cl. D10-79.000.

Dolphin Camper Company: *See*—
Mertes, Wayne M., 254,539, Cl. D12-99.000.

Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., to Rubbermaid Commercial Products Inc. Card file drawer. 254,526, 3-25-80, Cl. D6-191.000.

Dowd, Allyn C.; and Stiller, Miles N., to Massey-Ferguson Inc. Hydraulic hose guard for use with excavating machines or the like. 254,548, 3-25-80, Cl. D15-28.000.

Dunlap, Don W.: *See*—
Kramer, Ernest W.; and Dunlap, Don W., 254,519, Cl. D2-190.000.

Evans, David M.; and Scherer, Henry W., to S & C Electric Company. High voltage fuse end fitting. 254,545, 3-25-80, Cl. D13-35.000.

F. W. Bell, Inc.: *See*—
Davis, Wesley B.; and Dierker, Jeffrey A., 254,536, Cl. D10-79.000.

Fiat Societa per Azioni: *See*—
Margiaria, Giorgio; and Gay, Francesco, 254,543, Cl. D12-169.000.

Gay, Francesco: *See*—
Margiaria, Giorgio; and Gay, Francesco, 254,543, Cl. D12-169.000.

Genaro, Donald M.; Stokes, Rembert R.; and Sylvester, Gordon E., to Bell Telephone Laboratories, Incorporated. Folding keyboard pad. 254,554, 3-25-80, Cl. D18-12.000.

Gentry, Richard W. Parts cleaning and de-greasing machine. 254,549, 3-25-80, Cl. D15-34.000.

Gist, Alfred. Locking device to prevent removal of sliding windows and doors. 254,533, 3-25-80, Cl. D8-331.000.

Glynn, John H.; and Glynn, Patrick J. Roofing safety bracket. 254,534, 3-25-80, Cl. D8-356.000.

Glynn, Patrick J.: *See*—
Glynn, John H.; and Glynn, Patrick J., 254,534, Cl. D8-356.000.

Goodyear Tire & Rubber Company, The: *See*—
Hitzky, Leon J., 254,542, Cl. D12-151.000.
Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; and Roberts, Charles W., 254,541, Cl. D12-147.000.

Grubb, Lawrence: *See*—
Johnson, Phillip; Grubb, Lawrence; and Simpson, Danny E., 254,560, Cl. D21-63.000.

Hampshire, James F.: *See*—
Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,526, Cl. D6-191.000.

Han, Robert K. S. Building. 254,573, 3-25-80, Cl. D25-18.000.

Healthco, Inc.: *See*—
McDonald, Francis J., 254,570, Cl. D24-12.000.

Henson, John C., to Henson-Kickernick,Inc. Brassiere. 254,517, 3-25-80, Cl. D2-24.000.

Henson-Kickernick,Inc.: *See*—
Henson, John C., 254,517, Cl. D2-24.000.

Hitzky, Leon J., to Goodyear Tire & Rubber Company, The. Tire. 254,542, 3-25-80, Cl. D12-151.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Miyachi, Einosuke; and Okuno, Tsutomu, 254,540, Cl. D12-110.000.

Honeywell Inc.: *See*—
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Jacobsen Manufacturing Company: *See*—
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Johnson & Johnson: *See*—
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Johnson, Logan W., to Minnesota Mining & Manufacturing Company. Tape dispenser. 254,556, 3-25-80, Cl. D19-69.000.

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Johnson, Robert L. Vacuum breaking tee. 254,564, 3-25-80, Cl. D23-40.000.

Karsten, Lee L., to Jacobsen Manufacturing Company. Lawn mower hand grip. 254,547, 3-25-80, Cl. D15-18.000.

Katz, Marcella M., to Katz, Marcella M. Sandal. 254,521, 3-25-80, Cl. D2-270.000.

Kean, Wallace R.; and Rouse, Melvin R. Mixing palette. 254,555, 3-25-80, Cl. D19-35.000.

Kelley, Eugene M. Wrench. 254,532, 3-25-80, Cl. D8-29.000.

Kemtron Operations Pty. Ltd.: *See*—
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Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; and Roberts, Charles W., to Goodyear Tire & Rubber Company, The. Tire. 254,541, 3-25-80, Cl. D12-147.000.

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Mahan, John A., to Northern Telecom Limited. Enclosure for a telephone jumper-wire interface unit. 254,552, 3-25-80, Cl. D24-99.000.

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Reineman, Richard G., 254,572, Cl. D24-38.000.

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McKinsey, Kevin P.; and Aamoth, Gerald R., to Atari, Inc. Video game control unit. 254,544, 3-25-80, Cl. D13-12.000.

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Moreton, John, to Bangor Punta Operations, Inc. Belt buckle. 254,522, 3-25-80, Cl. D2-427.000.

Nihizer, George F. Fish gripping tool. 254,563, 3-25-80, Cl. D22-31.000.

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Nunis, Richard A., to Walt Disney Productions. Coin-operated auto race amusement device. 254,557, 3-25-80, Cl. D21-01.000.

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Reineman, Richard G., to Marlin Fiberglass. Hydrotherapy spa. 254,571, 3-25-80, Cl. D24-38.000.

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Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 254,531, 3-25-80, Cl. D7-137.000.

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Smith, Judson L. Automatic towel rinsing machine. 254,550, 3-25-80, Cl. D15-39.000.

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Taggart, Paula. Child's chest or back tote. 254,518, 3-25-80, Cl. D2-25.000.

Terek, Greg P.: *See*—
Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,526, Cl. D6-191.000.

Thomas, Philip J.; Lang, Roger D.; and McAllister, John A., to Circuit Assembly Corp. Multi-contact electrical connector fixture press. 254,553, 3-25-80, Cl. D15-123.000.

Transco Plastics Corporation: *See*—
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